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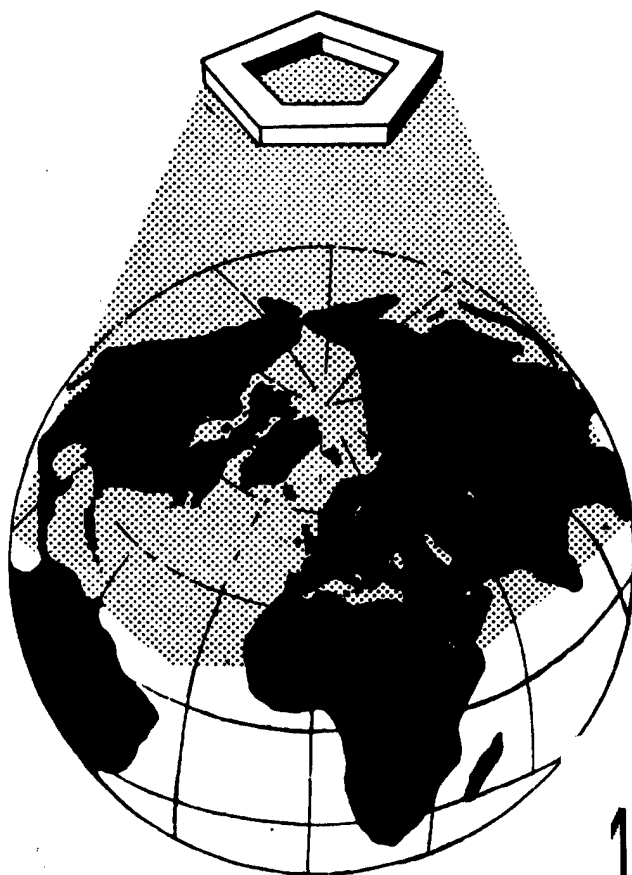
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DEFENSE PERSPECTIVES

MAJ. GEN. ROBERT ROSENBERG 1982

HEADQUARTERS

UNITED STATES AIR FORCE



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D E F E N S E P E R S P E C T I V E S

Major General Robert A. Rosenberg

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INTRODUCTION

THIS PRESENTATION COVERS SEVERAL INTER-RELATED SUBJECTS: THE GROWTH OF SOVIET POWER; HOW THE SOVIET THREAT DRIVES THE TYPE OF FORCES WE NEED; AND SOME MATERIAL TO PUT DEFENSE SPENDING IN PERSPECTIVE BY RELATING IT TO OTHER U.S. EXPENDITURES.

WE IN THE AIR FORCE SHARE A VITAL RESPONSIBILITY WITH OSD, THE ADMINISTRATION, AND THE CONGRESS TO MAINTAIN THE TRUST OF THE PUBLIC THAT WE ARE NOT SPENDING OUR NATIONAL RESOURCES UNWISELY ON THE MILITARY SYSTEMS WE PURSUE. THAT MEANS WE HAVE A RESPONSIBILITY TO OBJECTIVELY ASSESS ALTERNATE COURSES OF ACTION--WHICH IS MY GOAL AS THE AIR FORCE'S CHIEF ANALYST.

I LIKE TO THINK OF MY JOB AS THE PROCESS OF "SHEDDING LIGHT"--PRESENTING ALL THE FACTS, FROM A NEUTRAL, BALANCED VIEWPOINT, IN SUFFICIENT DEPTH AND DETAIL FOR THE ISSUE OR DECISION AT HAND.

TODAY, THE U.S. FACES THE PROBLEM OF REACTING TO AN UNPRECEDENTED AND RELENTLESS GROWTH OF SOVIET POWER--AND SOVIET/SURROGATE ADVENTURISM. WE HAVE EMBARKED ON A COMPREHENSIVE PROGRAM TO STRENGTHEN OUR DETERRENT POSTURE, AND REVERSE THE DECLINE IN U.S. STRATEGIC CAPABILITIES RELATIVE TO THE SOVIET UNION.

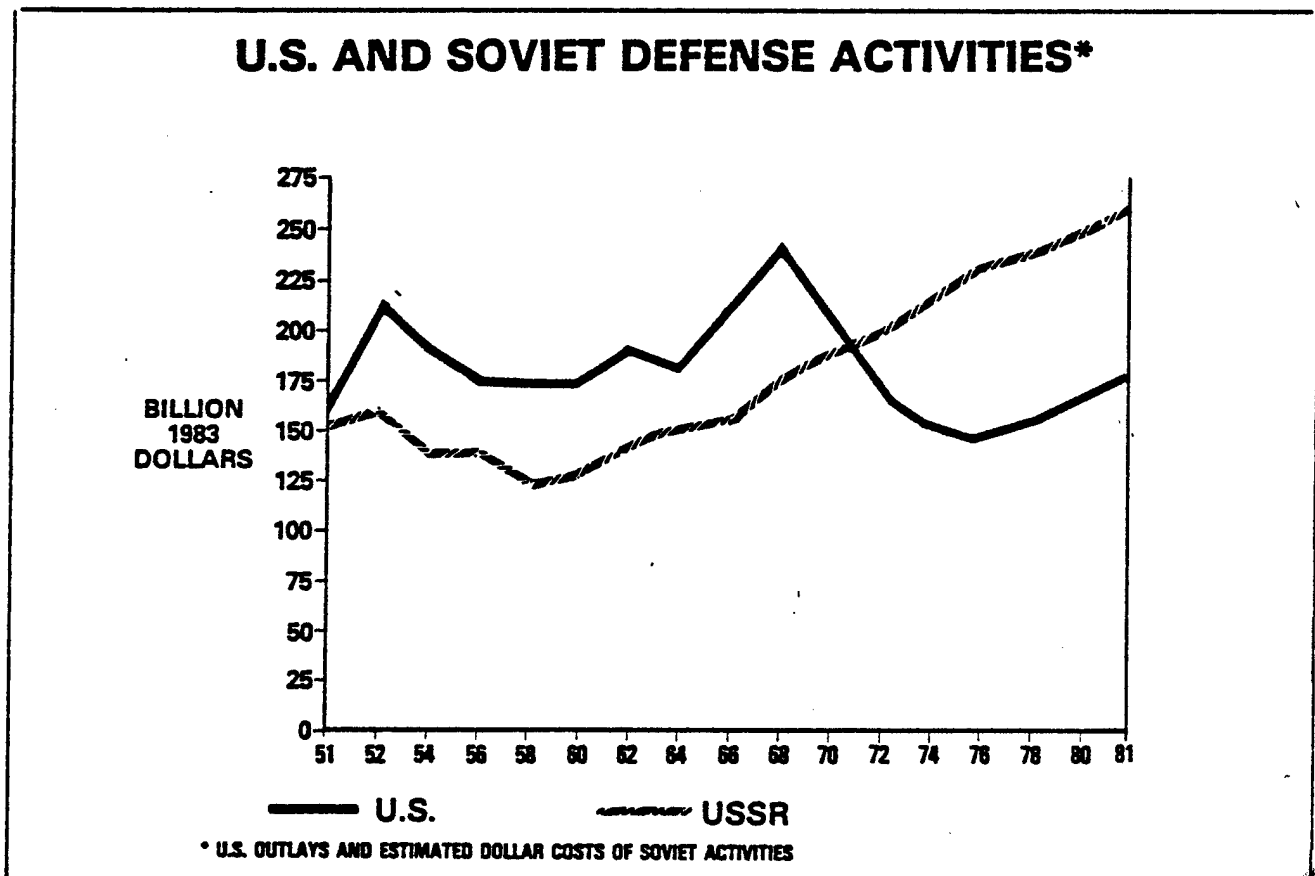
THIS PROGRAM WAS DEVELOPED WITH SERIOUS THOUGHT. REGARDLESS OF WHAT YOU MIGHT HEAR ABOUT RISING DEFENSE BUDGETS, THE DEPARTMENT OF DEFENSE IS AGGRESSIVELY PURSUING ACTIONS TO KEEP COSTS DOWN. BUT, THE BOTTOM LINE IS THAT WE ARE IN A VERY REAL COMPETITION WITH THE SOVIET UNION, AND WE CANNOT AFFORD TO LET OURSELVES SLIDE INTO A POSITION OF INFERIORITY. WE CANNOT AFFORD TO CUT PROGRAMS THAT ARE NEEDED TO RESPOND TO THE SOVIET THREAT.

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THE THREAT IS REAL.....AND GROWING!

THE SOVIET THREAT IS REAL. WHILE THERE IS ROOM FOR DISCUSSION ON WHY THE SOVIETS ARE WILLING TO DEVOTE A LARGE PORTION OF THEIR RESOURCES TO THE MILITARY, THERE IS NO DOUBT THAT THEY HAVE ASSEMBLED A POWERFUL MILITARY MACHINE.

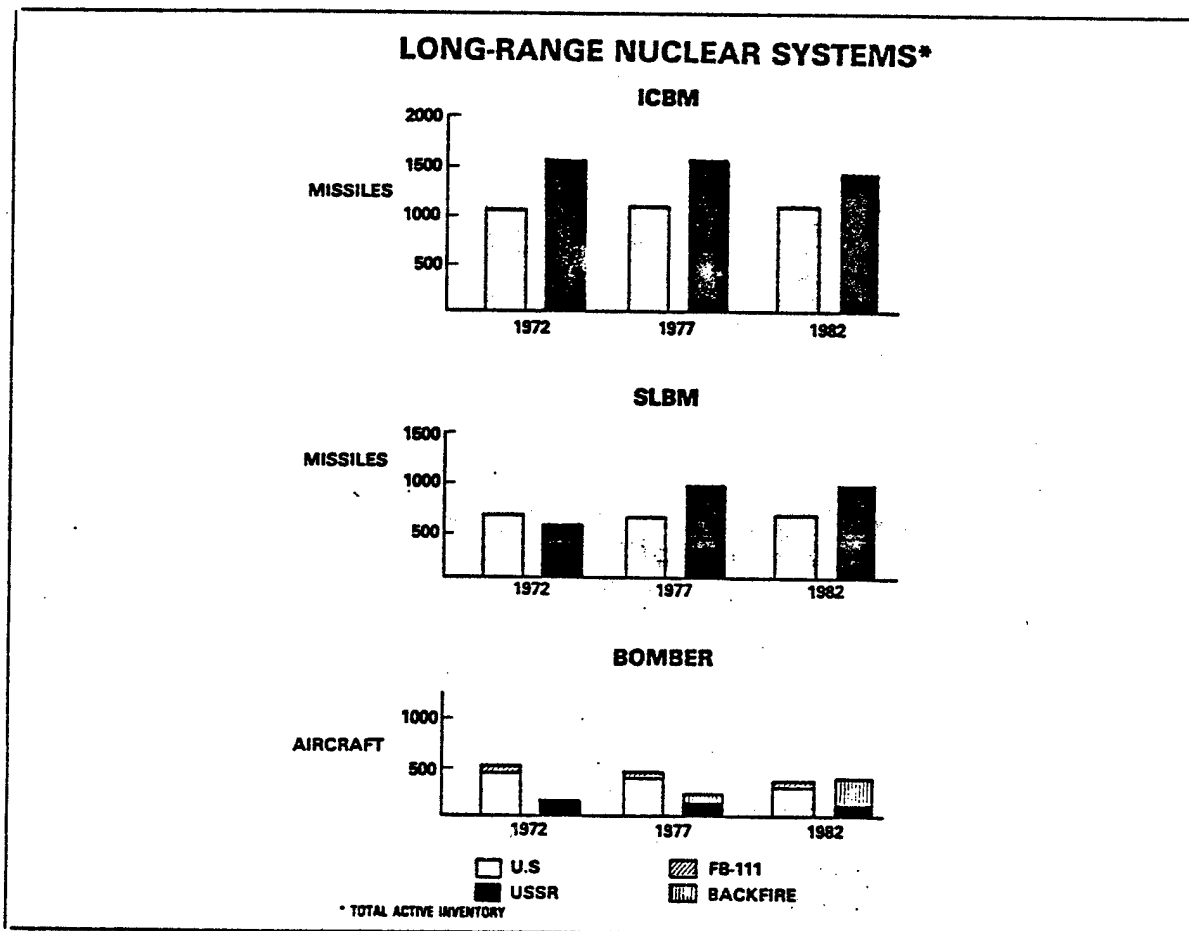
LET ME GIVE YOU SOME EXAMPLES.



THIS FIGURE COMPARES TOTAL U.S. AND SOVIET MILITARY EXPENDITURES FROM 1951 TO 1981. THESE COSTS ARE IN CONSTANT DOLLARS, WHICH MEANS THEY HAVE BEEN ADJUSTED TO ELIMINATE THE EFFECTS OF INFLATION. AS YOU CAN SEE, SOVIET EXPENDITURES HAVE BEEN RISING AT A STEADY RATE SINCE THE LATE 1950s, WHILE THE U.S. BEGAN TO CUT BACK DRAMATICALLY AFTER THE VIETNAM WAR.

SOVIET REAL GROWTH HAS PROCEEDED AT A STEADY RATE OF ABOUT THREE PERCENT PER YEAR. SINCE 1971, THEY HAVE OUTSPENT US BY OVER 600 BILLION DOLLARS, AND THE GAP IN 1981 ALONE WAS ABOUT \$80 BILLION. EVEN WITH LARGE DOD INCREASES, THEY WILL CONTINUE TO OUTSPEND US FOR THE FORESEEABLE FUTURE.

WE HAVE BEEN SPENDING ABOUT 5 TO 7 PERCENT OF OUR GROSS NATIONAL PRODUCT (GNP) ON DEFENSE. THEY SPEND ABOUT 13 PERCENT. THE LAST TIME WE SPENT 13 PERCENT WAS DURING THE KOREAN WAR, AND THE HIGHEST WE REACHED DURING THE VIETNAM WAR WAS 9 PERCENT.

Strategic Forces

THIS CHART SHOWS TRENDS IN THE NUMBERS OF U.S. AND SOVIET STRATEGIC SYSTEMS. THEY NOW HAVE ALMOST 1400 ICBMs vs OUR 1052, ABOUT 300 MORE SLBMs, AND ABOUT THE SAME NUMBER OF BOMBERS. HOWEVER, THESE NUMBERS DO NOT FULLY REFLECT THE RESULTS OF THE SOVIETS' MASSIVE INVESTMENT IN STRATEGIC SYSTEMS.

THE SOVIETS HAVE FOCUSED ON IMPROVING THEIR ICBM FORCE, WHILE U.S. MODERNIZATION HAS BEEN DELAYED AND DEFERRED. THEY HAVE INCREASED THE ACCURACY, POWER, AND NUMBER OF WARHEADS ON THEIR ICBMs, SO THEY NOW HAVE THE CAPABILITY TO DESTROY ALL TYPES OF TARGETS IN AN INITIAL ATTACK.

THEIR SS-18s HAVE UP TO 10 WEAPONS EACH, THEIR SS-17s HAVE 4, AND THEIR SS-19s HAVE 6. OUR MOST CAPABLE ICBM, THE MINUTEMAN III, HAS ONLY 3 WEAPONS. THEY HAVE ADDED OVER 2300 WEAPONS TO THEIR ICBM FORCE IN THE LAST DECADE, AND THEY NOW HAVE OVER 5500 ICBM WARHEADS TO OUR 2900.

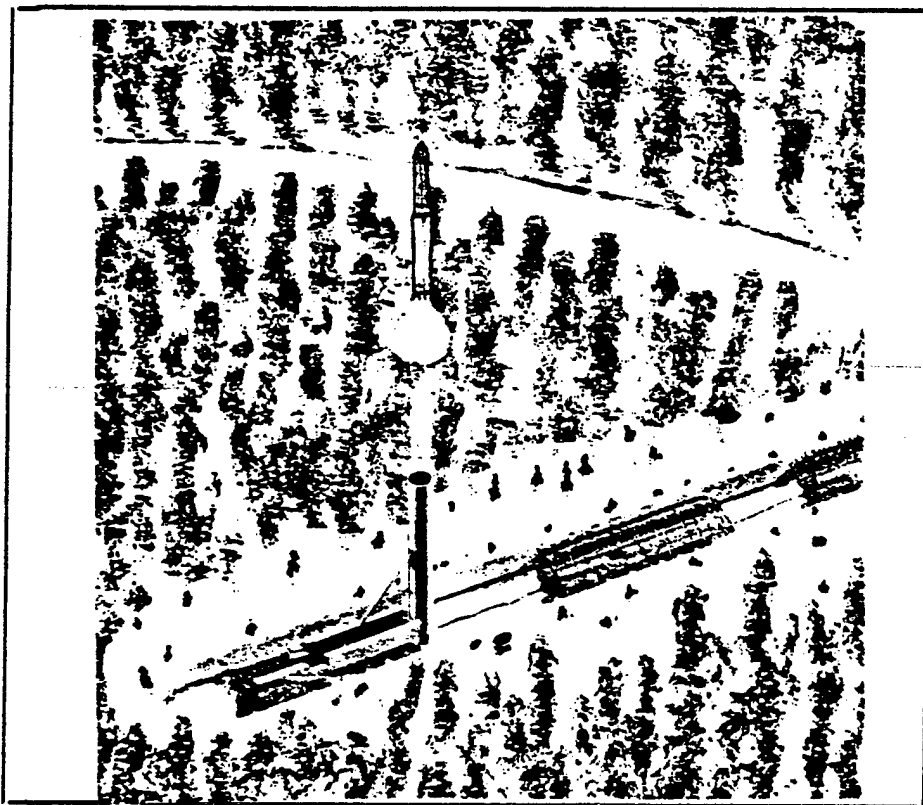
THE SOVIETS HAVE 950 SLBMs ON 62 SUBMARINES vs OUR 576 ON 36 SUBMARINES. THEIR SLBM LEG IS BEING STRENGTHENED BY THE ADDITION OF THE TYPHOON CLASS SUBMARINE, WHICH HAS LONGER RANGE SLBMs, EXPANDED PATROL AREAS, SHORTER DISTANCES TO PATROL STATIONS, AND THE CAPABILITY TO HIT U.S. TARGETS FROM HOME

WATERS; AND, TO COMPLICATE THE STRATEGIC WAR AT SEA, THE SOVIETS HAVE OVER 300, TO OUR LESS THAN 100, ATTACK SUBMARINES.

THE SOVIET BOMBER FORCE CONSISTS OF BEAR, BISON, AND STEADILY EXPANDING BACKFIRE FORCES. THE BACKFIRE HAS SUFFICIENT RANGE TO ATTACK THE U.S. EITHER BY USING AERIAL REFUELING OR POST-STRIKE RECOVERY IN CUBA OR ELSEWHERE IN THE WESTERN HEMISPHERE. LONG RANGE AIR-TO-SURFACE MISSILES HAVE BEEN DEPLOYED, AND NEW BOMBERS AND TANKERS ARE PROJECTED IN THE EIGHTIES.

OUR PRIMARY CONCERNS WITH THE U.S. TRIAD OF STRATEGIC OFFENSIVE FORCES ARE ICBM VULNERABILITY AND THEIR DECLINING EFFECTIVENESS AGAINST INCREASINGLY HARD SOVIET TARGETS, SLBM LIMITATIONS IN RANGE AS WELL AS AGAINST HARD TARGETS, THE SERIOUS AGING OF THE B-52 FLEET, AND DECREASING ABILITY OF CURRENT U.S. MANNED BOMBERS TO PENETRATE SOVIET DEFENSES. WE ARE ALSO WORKING TO IMPROVE COMMAND AND CONTROL COMMUNICATIONS TO INSURE THE NATIONAL COMMAND AUTHORITIES CAN COMMUNICATE WITH OUR STRATEGIC FORCES THROUGHOUT ALL LEVELS OF CONFLICT.

U.S. STRATEGIC FORCES CONTINUE TO BE SUPPORTED BY CAPITAL INVESTMENTS MADE IN THE FIFTIES AND SIXTIES. THAT HAS NOT ALLOWED OUR STRATEGIC FORCE MODERNIZATION TO KEEP PACE WITH THE THREAT. A SUSTAINED COMMITMENT OVER SEVERAL YEARS WILL BE REQUIRED TO RECTIFY THIS SITUATION.



LAUNCH OF A SOVIET
SS-20 MOBILE MISSILE.

THE THREAT IS REAL, AND WE MUST NOT ALLOW OURSELVES TO BE TAKEN IN OR CONFUSED BY THE DUPLICITY OF THE SOVIETS OR THEIR APOLOGISTS.

THE SOVIETS ARE RUNNING A PROPAGANDA CAMPAIGN AGAINST THE PLANNED DEPLOYMENT OF PERSHINGs AND GLCMs IN EUROPE BY ACCUSING US OF FUELING A NUCLEAR ARMS RACE AND BY RAISING FEARS THAT WE WILL TURN EUROPE INTO A NUCLEAR BATTLEGROUND.

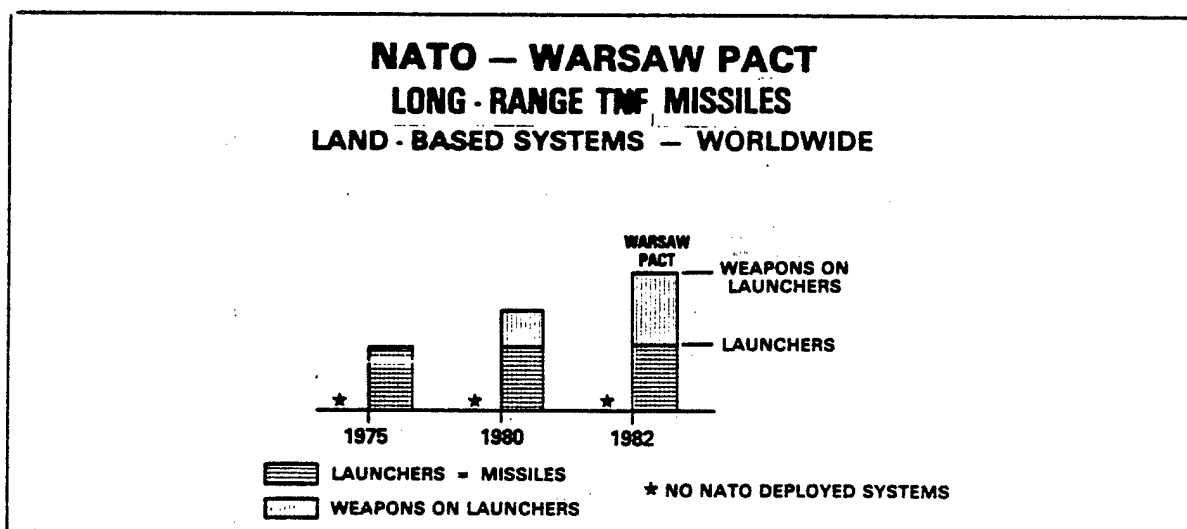
BUT THEY CLAIM THAT THEIR MOBILE SS-20 IS NO MORE THAN SIMPLE MODERNIZATION. EACH SS-20 CARRIES THREE ACCURATE WARHEADS THAT CAN BE AIMED AT SEPARATE TARGETS. ITS RANGE FAR EXCEEDS THAT OF PERSHING OR GLCMs, AND EACH SS-20 LAUNCHER ALSO HAS A RELOAD MISSILE WITH THREE MORE WARHEADS. AND AGAIN, THE LAUNCHERS ARE MOBILE, WHEREAS THE SYSTEMS THEY ARE REPLACING ARE AT FIXED, AND THEREFORE MORE VULNERABLE, SITES.

IN SUM, THE SOVIETS ARE IN THE MIDDLE OF A MASSIVE THEATER NUCLEAR DEPLOYMENT PROGRAM WHICH PROVIDES A SIX-FOLD INCREASE IN LONG RANGE WEAPONS, IMPROVES THEIR KILL CAPABILITY, AND PREVENTS US FROM ATTACKING THEM DUE TO THEIR MOBILITY--WHILE ON THE WORLD SCENE, THEY ACCUSE US OF CAUSING AN ARMS BUILD-UP, EVEN THOUGH OUR PLANNED DEPLOYMENT IS IN RESPONSE TO THEIR ON-GOING SS-20 DEPLOYMENT, AND OUR RESPONSE WILL INCLUDE FAR FEWER AND SMALLER WEAPONS.

Theater Nuclear Forces (TNF)

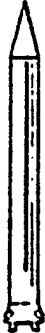




THE U.S. AND USSR, TOGETHER WITH THEIR ALLIES, DEPLOY A VARIETY OF LAND-BASED THEATER NUCLEAR FORCES (TNF) IN EUROPE. U.S. AND ALLIED TNF CONTRIBUTE TO DETERRENCE OF WARSAW PACT AGGRESSION BY PROVIDING THE CAPABILITY TO SUPPORT NATO'S STRATEGY OF FLEXIBLE RESPONSE, WHICH IS BASED ON A TRIAD OF CONVENTIONAL, THEATER NUCLEAR, AND STRATEGIC NUCLEAR FORCES.

THEATER NUCLEAR FORCES CONTRIBUTE TO DETERRENCE BY CREATING UNCERTAINTY CONCERNING U.S. AND ALLIED RESPONSES. THEY STRENGTHEN DETERRENCE BY DENYING THE ENEMY SANCTUARY BEHIND THE IMMEDIATE BATTLE ZONE AND BY PROVIDING A CAPABILITY TO BREAK UP THE MOMENTUM OF A MASSIVE OFFENSIVE. THEY MAY BE USED TO RESPOND TO ENEMY FIRST USE OF NUCLEAR OR CHEMICAL WEAPONS OR IN THE EVENT OF SIGNIFICANT FAILURE OF THE CONVENTIONAL DEFENSE.



THE TNF BALANCE IN EUROPE, HOWEVER, HAS SHIFTED AWAY FROM NATO. THE SOVIET UNION CONTINUES TO EXPAND AND MODERNIZE ITS TNF IN EUROPE, WHILE U.S. AND ALLIED DEPLOYMENTS HAVE DECREASED. MOREOVER, THE WARSAW PACT ENJOYS A VIRTUAL MONOPOLY IN LONG-RANGE TNF MISSILES.

LONG-RANGE TNF MISSILES (THEY ARE REFERED TO AS LONGER-RANGE, INTERMEDIATE-RANGE NUCLEAR FORCES (INF) FOR ARMS CONTROL PURPOSES) ARE THOSE WITH RANGES BETWEEN 1,800 AND 5,000 KILOMETERS. THE GROWTH ON THE CHART IS DUE TO SOVIET DEPLOYMENT OF THE SS-20 MISSILE, WITH THREE WEAPONS PER MISSILE.

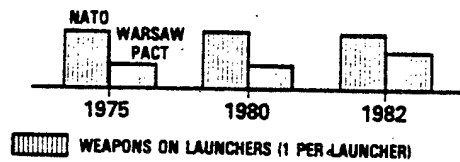
LONG RANGE TNF MISSILES					
USSR			U.S.		
					
	SS - 4	SS - 5	SS - 20	PERSHING II	GLCM
WARHEADS	1	1	3 MIRV	1	1
RANGE (KM)	2,000	4,100	5,000	1,800	2,500
OPERATIONAL FLIGHT TIME	MINUTES	MINUTES	MINUTES	MINUTES	HOURS
OPERATIONAL MODE	FIXED	FIXED	MOBILE	MOBILE	MOBILE
GLOBAL NUMBERS DEPLOYED (DECEMBER 1981)	300	35	288+	0	0
YEAR OPERATIONAL	1960	1961	1977	1983	1983

THIS CHART COMPARES CURRENT AND FUTURE LONG-RANGE TNF MISSILES. THIS MAJOR CATEGORY OF CURRENT U.S./SOVIET ARMS CONTROL NEGOTIATIONS INCLUDES THE SOVIET SS-4, SS-5, AND SS-20 BALLISTIC MISSILES AND THE U.S. PERSHING II BALLISTIC MISSILE AND GROUND-LAUNCHED CRUISE MISSILE (GLCM).

THE DEPLOYMENT OF PERSHINGs AND GLCMs WILL BEGIN TO REDUCE THE IMBALANCE IN EUROPE. HOWEVER, THESE SYSTEMS WILL NOT ENTER SERVICE UNTIL LATE 1983 AND WON'T BE FULLY OPERATIONAL UNTIL AFTER THE MIDDLE OF THE DECADE.

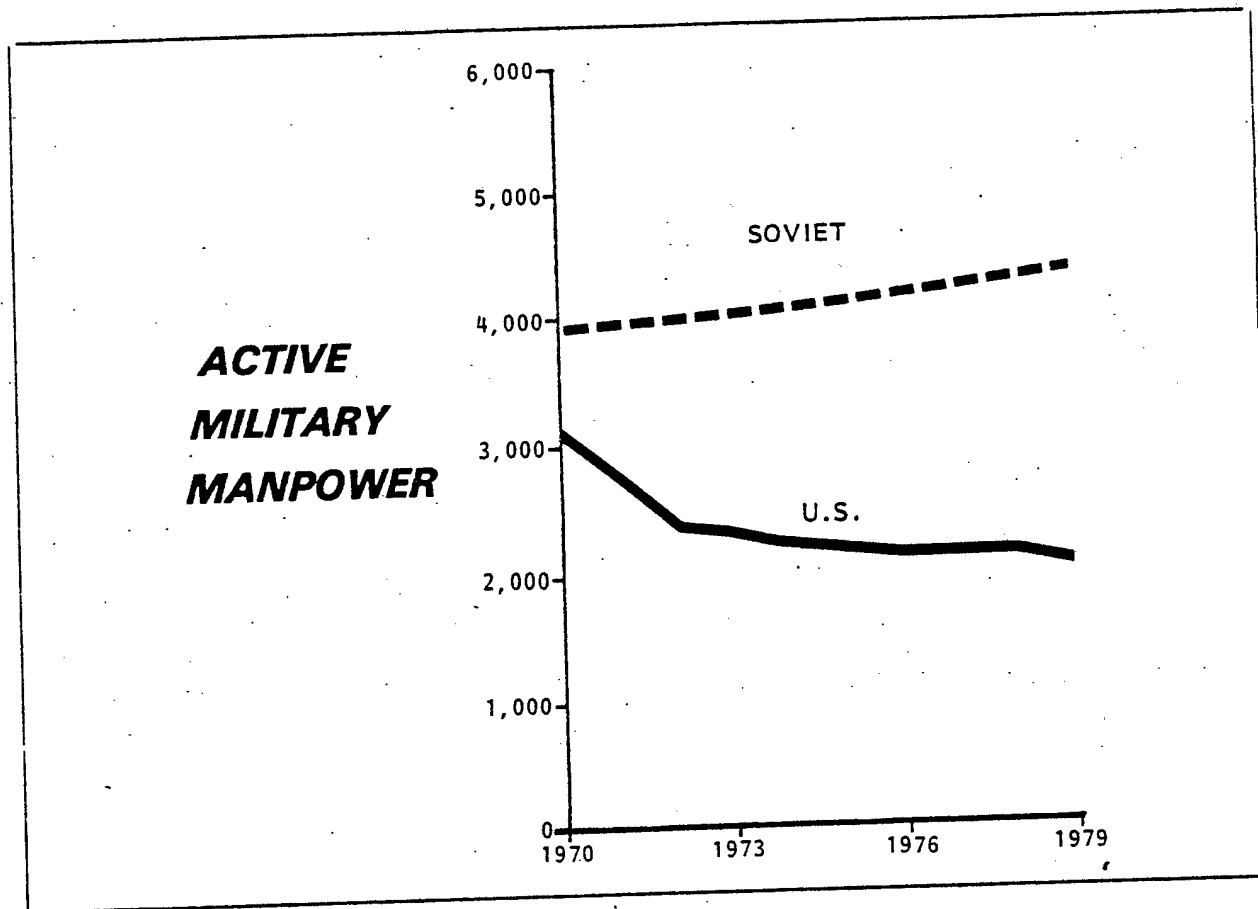
IN THE MEANTIME, THE SOVIETS ARE CONTINUING TO DEPLOY SS-20s. ONLY 2/3 ARE DEPLOYED IN THE EUROPEAN THEATER, BUT WITH THEIR 5000 KILOMETER (3000 MILE) RANGE, EVEN THOSE DEPLOYED EAST OF THE URALS WILL BE ABLE TO REACH TARGETS IN NATO COUNTRIES.

**NATO — WARSAW PACT
MEDIUM-RANGE TNF MISSILES
LAND-BASED SYSTEMS — EUROPE**



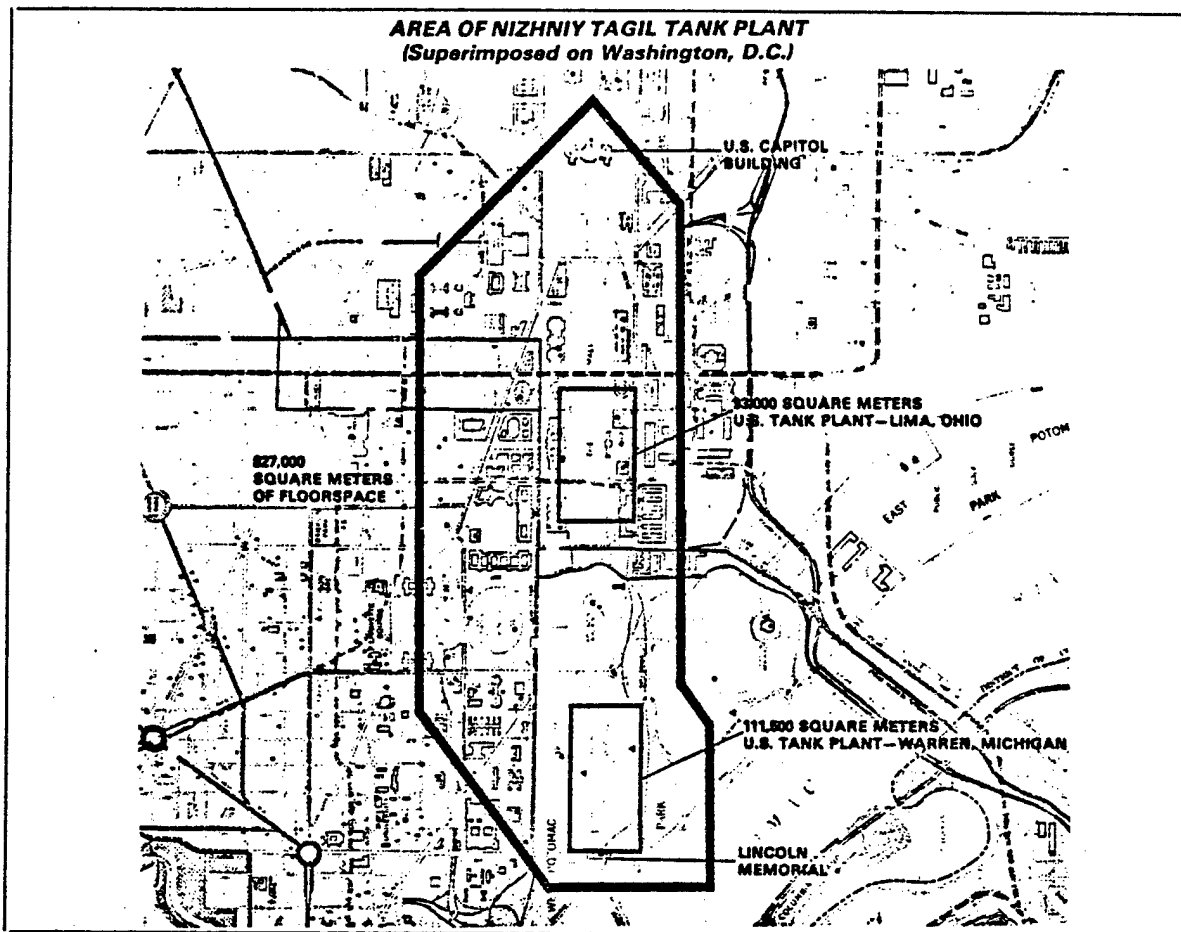
THERE IS SOME GOOD NEWS. NATO ENJOYS AN ADVANTAGE IN MEDIUM-RANGE TNF MISSILES. HOWEVER, THE WARSAW PACT ALSO HAS A GROWING CAPABILITY IN THIS AREA. CONTINUING SOVIET DEPLOYMENT OF THE MODERN SS-22 MISSILE AND DEVELOPMENT OF THE SS-X-23 PROVIDE THE WARSAW PACT WITH INCREASED FIREPOWER AND A GREATER RANGE OF OPTIONS FOR THEATER NUCLEAR CONFLICT. THE PERSHING 1A MISSILE PROVIDES NATO WITH ITS ONLY MEDIUM-RANGE MISSILE CAPABILITY.

AS THE FOREGOING COMPARISONS HAVE ILLUSTRATED, THE WARSAW PACT HOLDS AN OVERALL ADVANTAGE IN TNF DEPLOYMENT IN EUROPE. TO MEET THIS CHALLENGE, NATO MUST MAINTAIN THE MOMENTUM OF CURRENT PLANS AND PROGRAMS TO MODERNIZE ITS TNF, ESPECIALLY THE LONGER-RANGE MISSILE SYSTEMS, AS THE U.S. PURSUES ARMS CONTROL NEGOTIATIONS WITH THE SOVIET UNION.



THE MANPOWER STORY IS NO BETTER. THIS CHART SHOWS ACTIVE DUTY MILITARY PERSONNEL. SINCE 1970, WE DROPPED 34 PERCENT WHILE THE SOVIETS INCREASED ABOUT 10 PERCENT. WE NOW HAVE JUST OVER 2 MILLION PEOPLE IN UNIFORM, WHILE THEY OUTNUMBER US BY MORE THAN TWO TO ONE, WITH ALMOST 4-1/2 MILLION IN UNIFORM.

FURTHERMORE, THE SOVIETS WITH THEIR CONSCRIPT ARMY REQUIRE THAT EVERYONE WHO SERVES IN THE MILITARY STAY IN THE RESERVES UNTIL AGE 50. ON THAT BASIS, THE SOVIETS WOULD BE ABLE TO CALL UP OVER 8 MILLION RESERVES IN A CRISIS--ABOUT 6 TIMES THE U.S. NUMBER OF 1.4 MILLION ACTIVE AND INDIVIDUAL READY RESERVISTS.

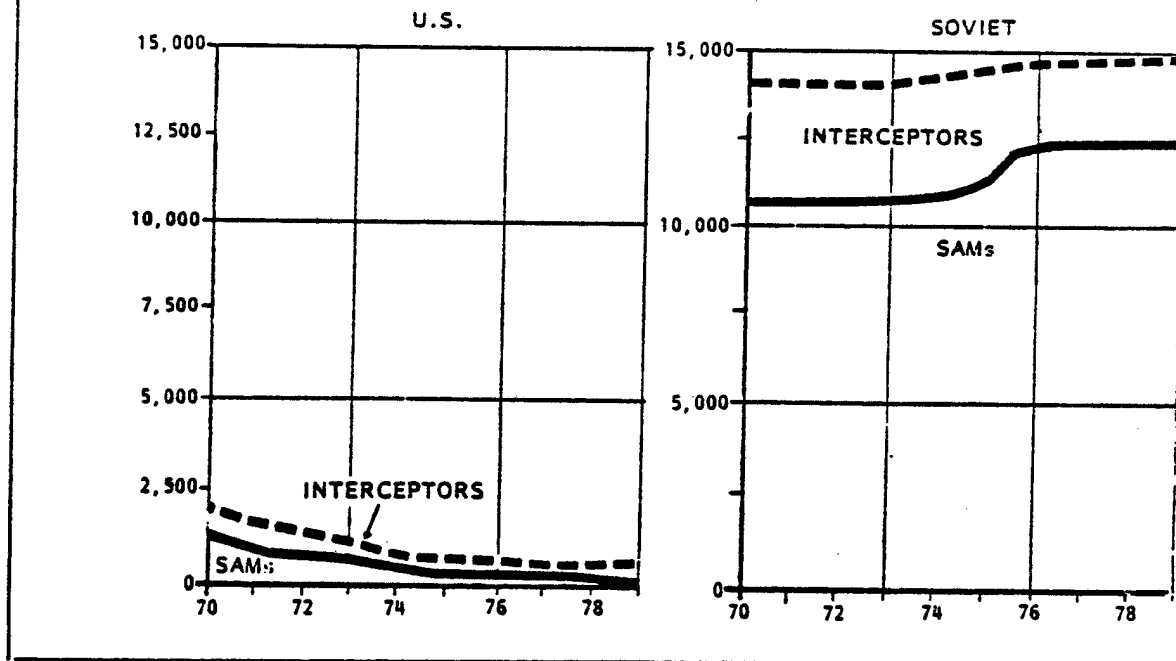


THIS IS A PICTURE OF THE SOVIET'S NIZHNIY TAGIL TANK PLANT SUPERIMPOSED ON WASHINGTON. THAT PLANT ALONE HAS MORE THAN 200 ACRES OF PRODUCTION LINES UNDER ROOF. BY WAY OF COMPARISON, THE LARGEST U.S. TANK PLANT (IN WARREN, MICHIGAN) HAS FEWER THAN 28 ACRES UNDER ROOF. THE SOVIETS PRODUCED 2,500 TANKS IN 1980 ALONE AND NOW OUTNUMBER US BY OVER FIVE TO ONE.

THE SOVIETS ALSO HAVE 7,300 FIGHTER AIRCRAFT VERSUS OUR 3,800. THEY PRODUCE FIRST-LINE FIGHTERS AT A RATE OF ABOUT ONE EVERY SEVEN HOURS--1300 THIS YEAR VERSUS OUR PLANNED AIR FORCE AND NAVY PRODUCTION OF ABOUT 500. EVERY THREE YEARS THEY PRODUCE AS MANY FIGHTER PLANES AS WE NOW HAVE IN OUR TOTAL INVENTORY.

IT HAS BEEN PROPOSED THAT WE SOLVE THE PROBLEM OF LACK-OF-QUANTITY BY BUYING LOTS OF LOW COST, SIMPLE AIRCRAFT TO MAKE UP THE DEFICIENCY. UNFORTUNATELY, THE SOVIET'S ACQUISITION STRATEGY MAKES THIS APPROACH INEFFECTIVE. THEY RECOGNIZE THE VALUE OF A QUALITY, DAY/NIGHT, ALL-WEATHER AIR FORCE; AND THAT IS WHAT THEY ARE PRODUCING--NOT SIMPLE, CHEAP AIRCRAFT.

AIR DEFENSE FORCES



ANOTHER COMPARISON--U.S. vs SOVIET AIR DEFENSE FORCES. WE NOW HAVE LESS THAN 350 INTERCEPTORS AND HAVE GOTTEN RID OF ALMOST ALL OUR U.S.-BASED SURFACE-TO-AIR MISSILES (SAMs). BUT, IN THE EVENT OF WAR, OUR PENETRATING FORCES WILL HAVE TO FACE UP TO 2500 INTERCEPTORS AND OVER 12,000 STRATEGIC SAMs ON LAUNCHERS. IS IT ANY WONDER THAT OUR BOMBER CREWS WOULD LIKE A NEWER PLANE THAN ONE THAT WAS BUILT BEFORE MOST OF THEM WERE BORN?

BUT, IF THE SOVIETS WERE TO ATTACK THE U.S., WE WOULD HAVE VIRTUALLY NO SAMs TO STOP THEM. WE WOULD HAVE OUR SMALL NUMBER OF INTERCEPTORS, BUT THEY ARE AGING. IN FACT, MANY NEED VACUUM TUBES FROM CZECHOSLOVAKIA TO KEEP OPERATING --NOT A VERY FORMIDABLE FORCE TO STOP ANY SIZABLE ATTACK BY BOMBERS OR CRUISE MISSILES.

THE SOVIETS ALSO SPEND \$2 BILLION PER YEAR ON CIVIL DEFENSE--EMPLOYING MORE THAN 100,000 FULL-TIME WORKERS. THEIR PLANS INCLUDE NATIONWIDE BLAST SHELTERS, UNDERGROUND FOOD AND WATER STORAGE, PRACTICE EVACUATIONS, AND RELOCATION CENTERS.

THE CURRENT ADMINISTRATION HAS RECOGNIZED THE NEED TO BOLSTER OUR STRATEGIC DEFENSES. WE PLAN TO IMPROVE THE DEW LINE AND DEPLOY OVER-THE-HORIZON RADARS, F-15 INTERCEPTORS, AND AWACS AIRCRAFT. THE ADMINISTRATION IS ALSO RE-EMPHASIZING RESEARCH ON BALLISTIC MISSILE DEFENSE AND PLANS TO EXPAND OUR CIVIL DEFENSE PROGRAM.

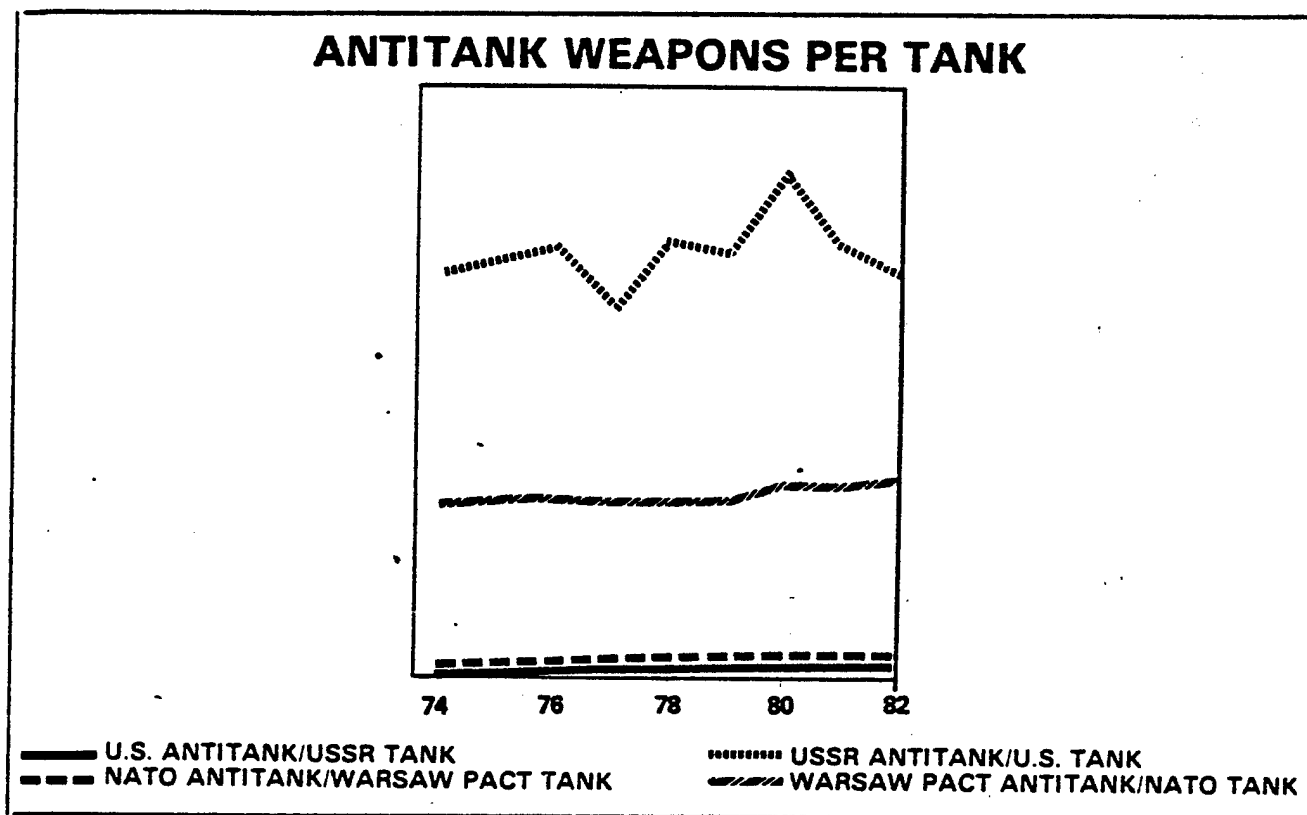
THE STRATEGIC DEFENSE IMPROVEMENTS WILL CLOSE GAPS IN OUR ABILITY TO PROVIDE DETECTION AND WARNING AND IMPROVE OUR CAPABILITY TO VECTOR OUR FIGHTERS TO INTERCEPT POINTS. FOR THE FIRST TIME IN MANY YEARS, I CAN FORESEE THE DAY WHEN THE U.S. WON'T BE OPEN TO A BOMBER ATTACK.



THE PACT HAS EXCEEDED NATO'S MODERNIZATION PROGRAM BY WIDER DEPLOYMENT OF T-64 AND T-72 TANKS AND CONTINUING DEVELOPMENT OF A NEW, MORE CAPABLE TANK, DESIGNATED THE T-80.

MANY PEOPLE HAVE CLAIMED THAT THE TANK IMBALANCE IS NOT IMPORTANT BECAUSE OF THE DEVELOPMENT OF ANTITANK WEAPONS THAT WILL FACILITATE DESTRUCTION OF TANKS.

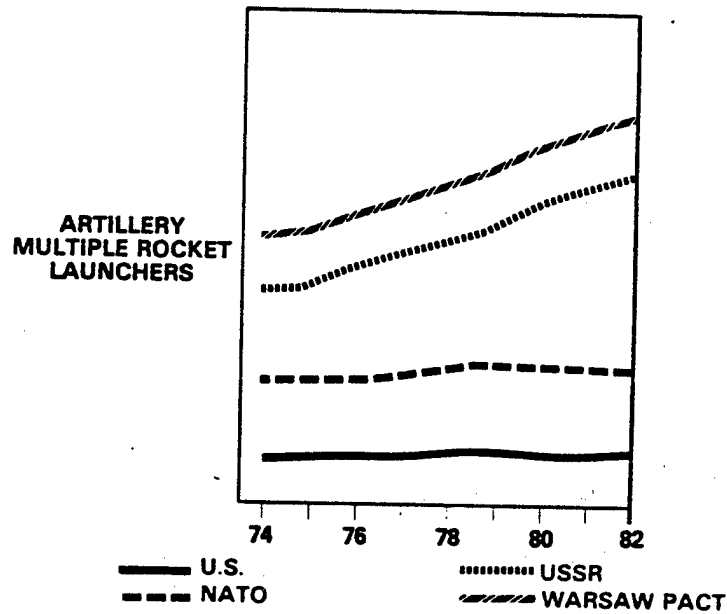
HOWEVER, IF THAT IS THE CASE, THEN THE SITUATION IS EVEN WORSE, BECAUSE THE WARSAW PACT ALSO HAS THE ADVANTAGE IN ANTITANK WEAPONS.



THIS CHART SHOWS THE NUMBER OF BLUE ANTITANK WEAPONS PER RED TANK--AND VICE VERSA--A MASSIVE IMBALANCE IN FAVOR OF THE PACT THAT CONTINUES TO WIDEN. FURTHERMORE, THE DISPARITY IS EXACERBATED BY PACT DEVELOPMENT OF A NEW GENERATION OF MORE ACCURATE, TUBE-LAUNCHED ANTITANK MISSILES WITH GREATER RANGE AND PENETRATIVITY.

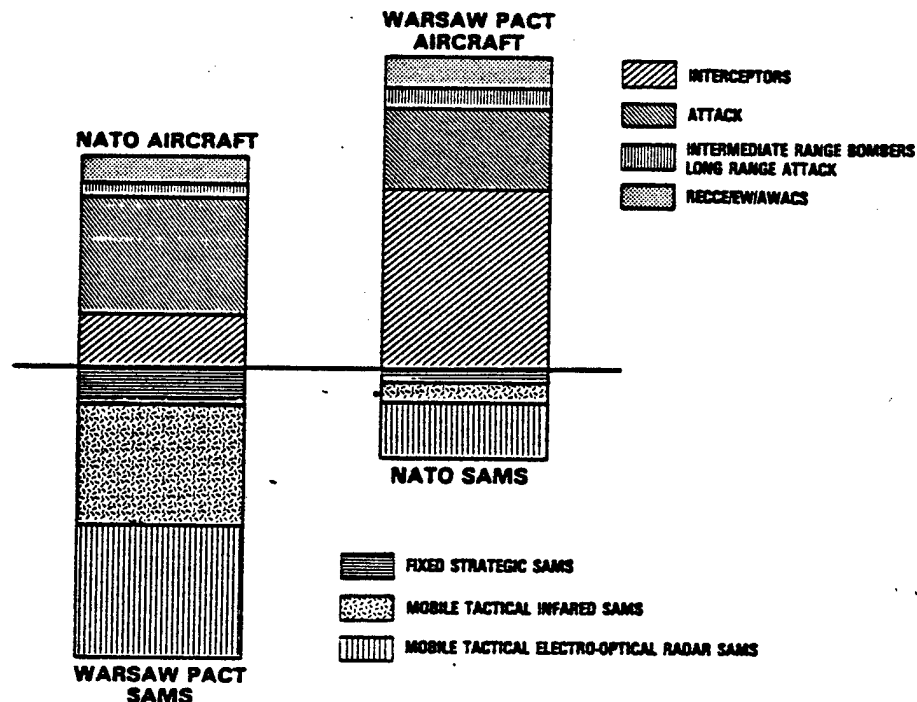
AS A RESULT OF THIS IMBALANCE, NATO RELIES ON CLOSE AIR SUPPORT (CAS) AIRCRAFT AND HELICOPTERS--ONE OF THE FEW AREAS WHERE NATO HAS A NUMERICAL ADVANTAGE--TO DEFEAT ENEMY ARMOR. UNFORTUNATELY, A RAPID INCREASE IN THE PACT'S ASSAULT HELICOPTERS WILL OVERTURN THIS ADVANTAGE BY THE MID-EIGHTIES.

ARTILLERY AND MULTIPLE ROCKET LAUNCHERS



THIS CHART SHOWS ANOTHER EXAMPLE OF AN ADVERSE TREND IN GROUND FORCES EQUIPMENT. THE DISPARITY IN ARTILLERY AND MULTIPLE-ROCKET LAUNCHERS ALSO WEIGHS HEAVILY IN THE WARSAW PACT'S FAVOR, AND THEIR ARTILLERY AND MULTIPLE-ROCKET LAUNCHER ADVANTAGE WILL LIKELY INCREASE THROUGH THE END OF THE DECADE.

COMBAT AIRCRAFT VERSUS SAM INVENTORIES EUROPE — UNREINFORCED — 1982



THIS CHART SUMMARIZES COMBAT AIRCRAFT AND AIR DEFENSE FORCES IN EUROPE. IT SHOWS THAT NATO IS CONSIDERABLY OUTNUMBERED IN BOTH CATEGORIES, BUT MORE IMPORTANTLY IT DEPICTS THE THREAT FACING EACH TYPE OF AIRCRAFT.

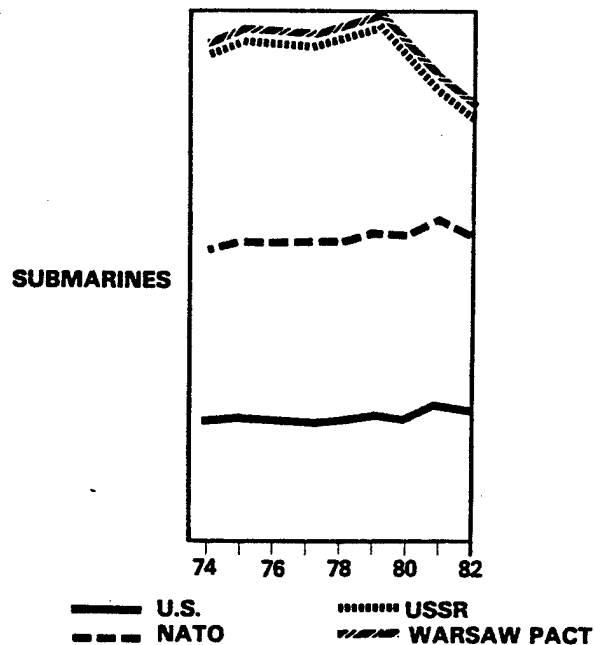
FOR EXAMPLE, NATO ATTACK AIRCRAFT ARE OUTNUMBERED BY PACT INTERCEPTORS BY 3 TO 2. BUT, THE REVERSE RATIO IS JUST THE OPPOSITE--THE WARSAW PACT ATTACK ENJOY A 3 TO 2 ADVANTAGE OVER NATO INTERCEPTORS. ON TOP OF THAT, OUR PILOTS WILL HAVE TO WORRY ABOUT THREE TIMES THE NUMBERS OF SURFACE-TO-AIR MISSILES (SAMs).

IGNORING THE DEFENSES TO BE FACED, THE ONLY AREA WHERE WE ENJOY AN ADVANTAGE IS IN NUMBERS OF ATTACK AIRCRAFT. HOWEVER, THIS MUST BE VIEWED IN THE CONTEXT OF DIFFERING REQUIREMENTS FOR TACTICAL AIR. NATO PLACES HEAVY RELIANCE ON CLOSE AIR SUPPORT TO GROUND FORCES TO PARTIALLY OFFSET THE LARGE GROUND FORCE FIREPOWER INBALANCE. THE PACT HAS PLACED MORE RELIANCE ON HEAVY ARMOR AND ARTILLERY IN A COMBINED ARMS OFFENSIVE, ALTHOUGH THEIR CLOSE AIR SUPPORT FORCES ARE INCREASING.

THROUGH THE MID-EIGHTIES, THE CURRENT GENERATION OF U.S. AND NATO AIRCRAFT WILL RETAIN QUALITATIVE SUPERIORITY IN BOTH AIR-TO-AIR AND AIR-TO-GROUND CAPABILITIES--OFFSETTING THE PACT'S QUANTITATIVE EDGE. HOWEVER, NEW FIRST-LINE SOVIET AIRCRAFT, WITH SOPHISTICATED AVIONICS AND IMPROVED SPEED, RANGE, AND WEAPONRY, COULD CHANGE THAT OVERALL BALANCE IF WE DO NOT RESPOND TO THE INCREASING THREAT.

PUT VERY SIMPLY, IT MAKES NO SENSE TO FIELD LOTS OF LOW COST, DAYLIGHT-ONLY, SHORT-RANGE FIGHTERS AGAINST AN ENEMY WHO IS FIELDING ADVANCED NIGHT/ALL WEATHER CAPABLE SYSTEMS THAT CAN KILL THOSE LOW COST FIGHTERS BEFORE THEY EVER SEE THE ENEMY.

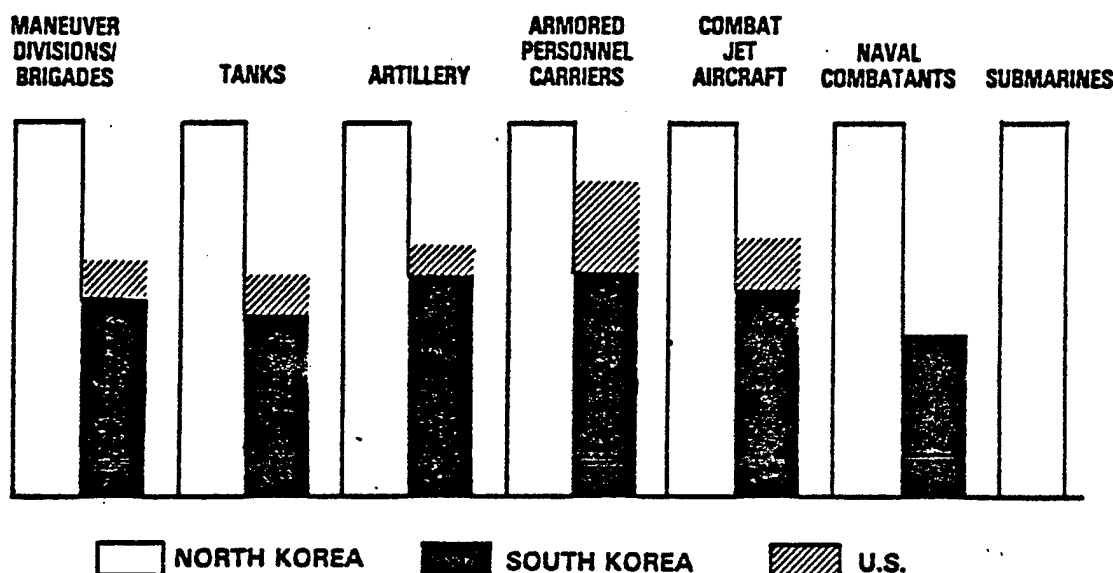
GENERAL PURPOSE SUBMARINES



AS IN THE CASE OF LAND AND AIR FORCES, THE BALANCE AT SEA HAS INCREASED THE RISK TO NATO, AS EXEMPLIFIED BY THIS COMPARISON OF GENERAL PURPOSE SUBMARINES. CRITICAL SEA LANES MUST REMAIN OPEN FOR THE U.S. TO REINFORCE EUROPE AND RE-SUPPLY ITS FORCES. YET, THE WARSAW PACT'S ABILITY TO INTERDICT SHIPPING IS FORMIDABLE.

SOVIET GENERAL PURPOSE SUBMARINES OUTNUMBER NATO'S BY 50 PERCENT AND OUTNUMBER THOSE OF THE U.S. BY OVER 3 TO 1.

COMPARISON OF U.S. / SOUTH KOREAN FORCES AND NORTH KOREAN FORCES



THE FORCE IMBALANCE IS NOT ISOLATED TO EUROPE. FOR THE PAST 31 YEARS, THE UNITED STATES HAS BEEN COMMITTED TO PROTECTING SOUTH KOREAN FREEDOM. THIS CHART ILLUSTRATES THE DIFFICULTY OF THAT TASK BY COMPARING U.S. AND SOUTH KOREAN FORCES TO THOSE OF NORTH KOREA. THE NORTH KOREANS LEAD IN ALMOST EVERY SIGNIFICANT ASPECT.

THE NORTH KOREAN ARMY HAS BEEN INCREASING ITS MOBILITY AND MECHANIZATION, UPGRADING ITS ARMORED FORCES, AND INCREASING ITS NUMBERS OF SELF-PROPELLED ARTILLERY.

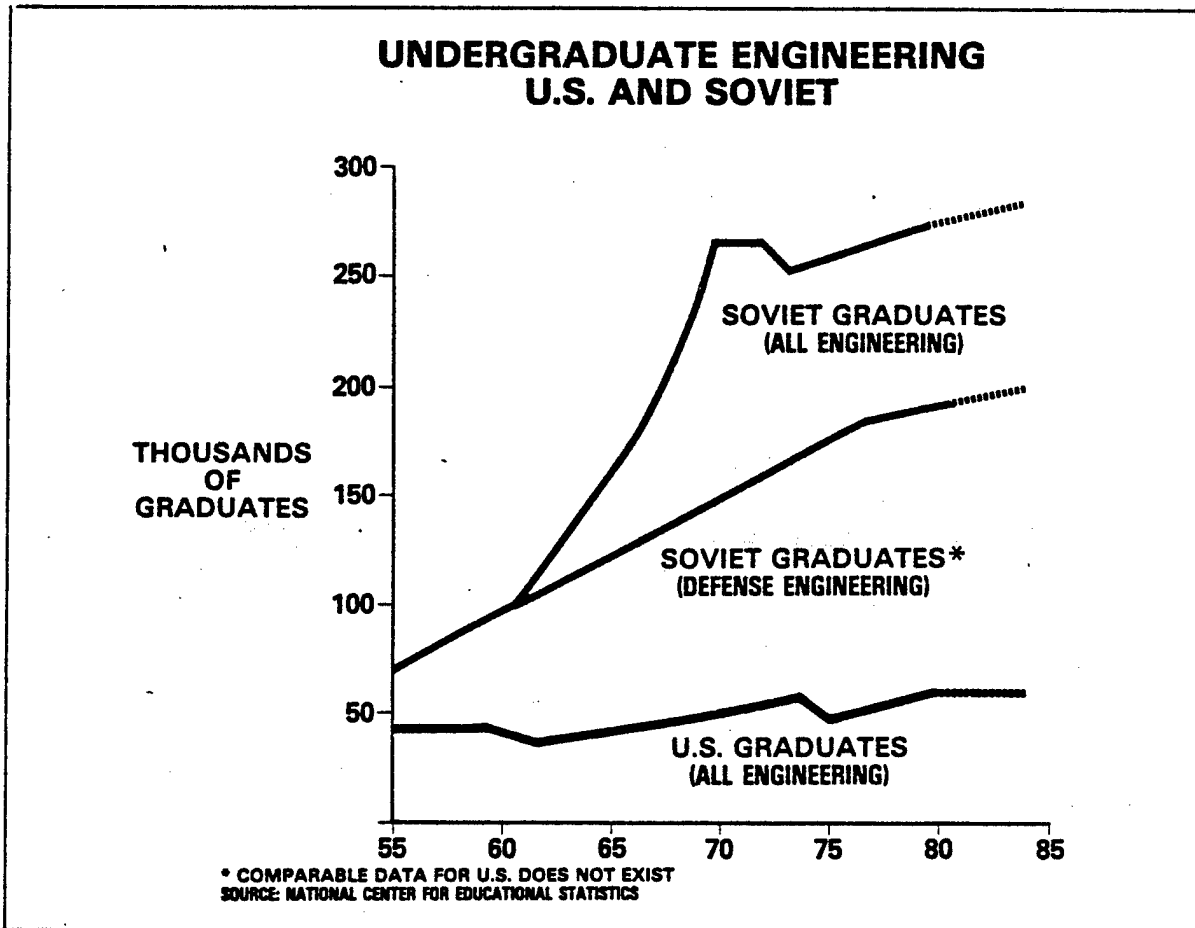
SINCE 1971, THEIR NAVY HAS INCREASED ATTACK BOATS BY ONE-THIRD, DOUBLED COASTAL PATROL CRAFT, MORE THAN TRIPLED SUBMARINES, AND MORE THAN QUADRUPLED THEIR AMPHIBIOUS WARFARE CRAFT.

DURING THE SAME TIME, THEIR AIR FORCE INCREASED THEIR FIGHTERS AND BOMBERS BY 20 PERCENT AND ALMOST TRIPLED THEIR TRANSPORTS AND HELICOPTERS.

NORTH KOREAN FORCES ARE CONTINUOUSLY POSTURED FOR ATTACK--ABLE TO STRIKE INTO THE SOUTH WITH LITTLE OR NO WARNING. ALTHOUGH IN-COUNTRY U.S. FORCES ARE A DETERRENT TO NORTH KOREAN AGGRESSION, RAPID AUGMENTATION OF U.S. FORCES WOULD BE CRITICAL SHOULD NORTH KOREA ATTACK.

THE CONCLUSION ONE COMES TO IS THAT THE MILITARY BALANCE HAS SHIFTED IN FAVOR OF THE SOVIETS AND WARSAW PACT OVER THE LAST DECADE, AND A GROWING ACCUMULATION OF DEFICIENCIES IS DEGRADING THE NATO ALLIANCE'S ABILITY TO MAINTAIN A CREDIBLE DETERRENT IN EUROPE AND OUR ABILITY TO DETER SOVIET AND SOVIET/SURROGATE ADVENTURISM WORLD-WIDE. SUSTAINED U.S. AND ALLIED DEFENSE INVESTMENT IS NEEDED TO REVERSE THE SHIFT OF MILITARY POWER AND OBTAIN THE MILITARY CAPABILITIES REQUIRED.

NON-DEFENSE INVESTMENT IS ALSO IMPORTANT--ESPECIALLY IN BUILDING A FOUNDATION FOR THE FUTURE. UNFORTUNATELY, THE FUTURE DOES NOT LOOK TOO BRIGHT. TODAY, WE HAVE ABOUT 600,000 FULL-TIME SCIENTISTS AND ENGINEERS IN RESEARCH AND DEVELOPMENT--THE SOVIETS HAVE ABOUT 900,000.



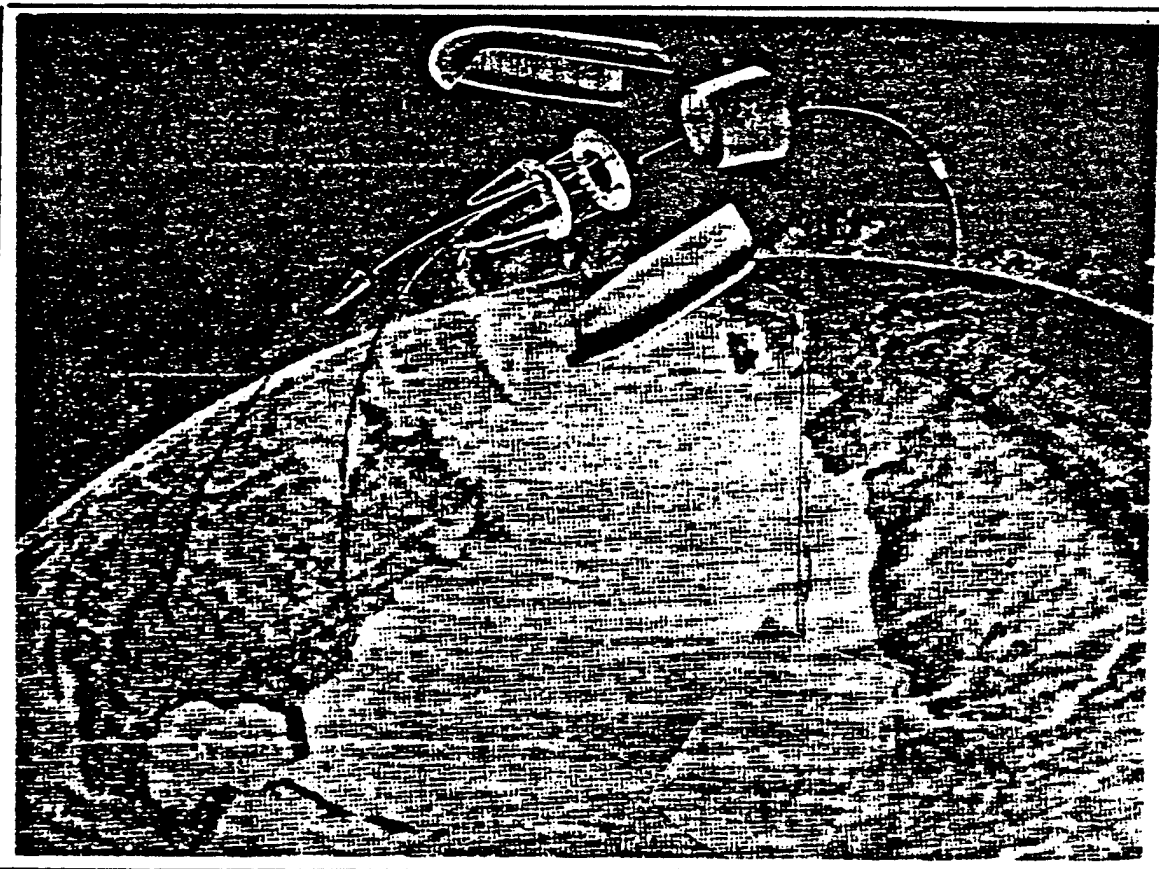
MORE WORRISOME IS THE OUTPUT OF THE TWO EDUCATION SYSTEMS. WE GRADUATE ABOUT 50,000 ENGINEERS EACH YEAR, WITH RELATIVELY FEW GOING INTO DEFENSE. THE SOVIETS GRADUATE OVER 250,000, WITH ABOUT 200,000 GOING INTO MILITARY ORIENTED WORK.

THE U.S. ENJOYS TECHNOLOGICAL SUPERIORITY, BUT WE CAN'T REST ON OUR LAURELS AND TAKE CONTINUED LEADERSHIP FOR GRANTED. WE CAN'T CONTINUE TO ASSUME THAT TECHNOLOGICAL SUPERIORITY IS AN AMERICAN BIRTHRIGHT. THE SOVIET UNION IS MAKING A DETERMINED AND, IN MANY AREAS, A SUCCESSFUL EFFORT TO REDUCE OR EVEN OVERCOME OUR TECHNOLOGICAL LEADS--AND WHERE THEY CAN'T DEVELOP IT, THEY STEAL THE TECHNOLOGY FOR MILITARY APPLICATION. SO IT'S ESSENTIAL THAT WE EXPLOIT OUR UNIQUE TALENTS AS A FREE SOCIETY TO COUNTER THE SOVIET THREAT WITH HIGHLY CAPABLE AND RELIABLE ADVANCED SYSTEMS--RATHER THAN MATCH THEM ON A ONE-FOR-ONE BASIS.

ANOTHER METHOD THE SOVIETS EMPLOY TO STRENGTHEN THEIR MILITARY IS THE ACQUISITION OF WESTERN TECHNOLOGY. WHILE THERE ARE NUMEROUS INTERPRETATIONS OF THE TERM "TECHNOLOGY", IN THIS CONTEXT THE REFERENCE IS TO THE APPLICATION OF SCIENTIFIC KNOWLEDGE, TECHNICAL INFORMATION, KNOW-HOW, CRITICAL MATERIALS, KEYSTONE MANUFACTURING AND TEST EQUIPMENT, AND END PRODUCT WHICH ARE ESSENTIAL TO THE RESEARCH AND DEVELOPMENT AS WELL AS THE SERIES MANUFACTURE OF MODERN HIGH-QUALITY WEAPONS AND MILITARY EQUIPMENT.

ENGINEERING EXPLOITATION OF SOMEONE ELSE'S TECHNOLOGY DOES NOT REQUIRE THE SAME LEVEL OF EFFORT AS BASIC RESEARCH. THE SOVIETS LEARNED THIS LESSON LONG AGO AND HAVE AN ORGANIZED CAMPAIGN TO ACQUIRE WESTERN TECHNOLOGY, EITHER LEGALLY OR ILLEGALLY.

THERE ARE MANY DOCUMENTED CASES WHERE THE SOVIETS AND THEIR ALLIES HAVE USED DIRECT ESPIONAGE TO OBTAIN VITAL TECHNICAL INFORMATION. THESE REPRESENT ONLY THE TIP OF THE THE ICEBERG IN TERMS OF THE TECHNOLOGY OBTAINED FROM OPEN SOURCES AND QUASI-LEGAL MEANS. IT IS VERY DIFFICULT IN A DEMOCRATIC SOCIETY TO ATTEMPT TO RESTRICT OPEN DISTRIBUTION OF TECHNICAL INFORMATION. BUT WHEN THOSE TECHNICAL AREAS THAT DIRECTLY BENEFIT THE SOVIETS WARFIGHTING CAPABILITY ARE OPENLY PUBLISHED AND DISCUSSED, CAUTION MUST BE EXERCISED.



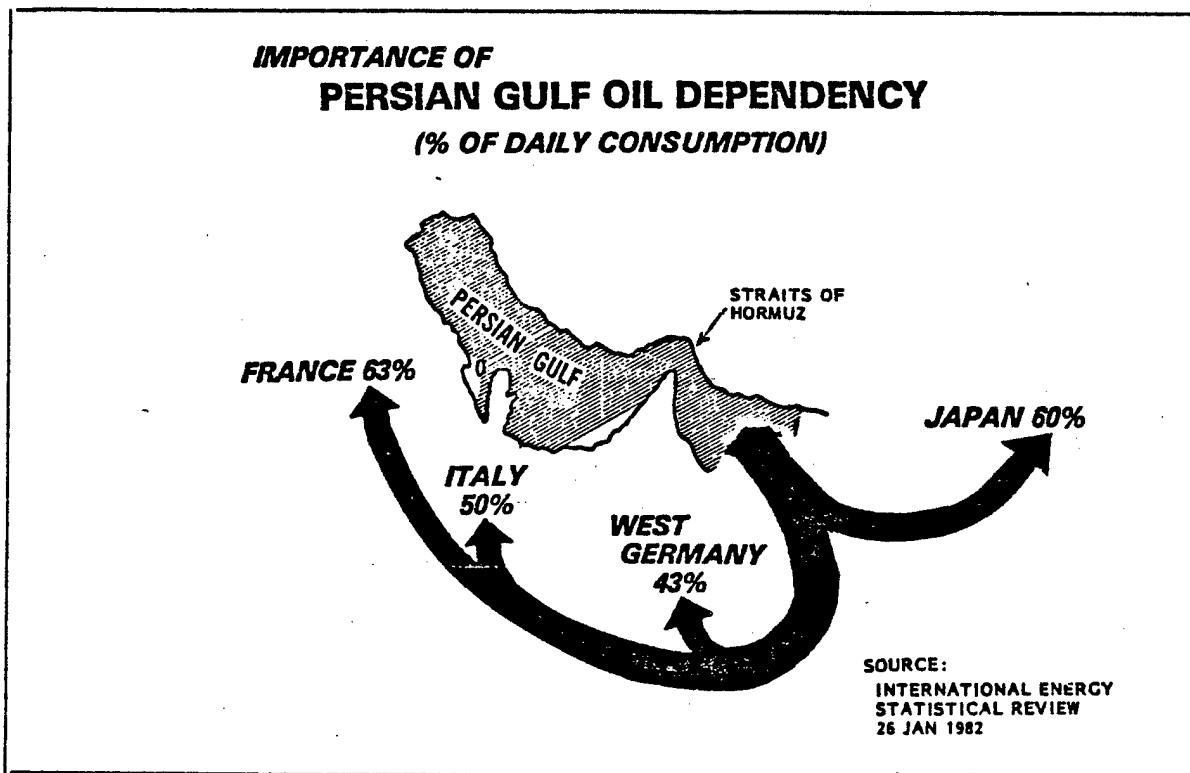
FOR EXAMPLE, THE SOVIETS ARE ACTIVELY PURSUING DETAILS ON SPECIAL MATERIALS, NOTABLY THE COMPONENTS USED IN THE NOSECONES AND ROCKET MOTORS OF OUR ICBMS. IF THEY CAN "STEAL" THIS KNOWLEDGE FROM THE WEST, IT WILL SAVE THEM YEARS OF DEVELOPMENTAL EFFORT. WE MAY BE PLACED IN THE POSITION OF HAVING OUR TECHNOLOGY "RETURNED" TO US IN THE FORM OF WEAPONS. CAREFUL REVIEW AND CONTROL OF WESTERN TECHNOLOGY MUST BE EXERCISED TO PREVENT THE SOVIET MILITARY FROM BECOMING STRONGER AS A RESULT OF THE DYNAMIC TECHNICAL GROWTH OF THE FREE WORLD.

Western Dependency on Foreign Strategic Materials

WHY--WHY THIS RELENTLESS BUILD UP OF SOVIET POWER? AS AN ANALYST I CAN ONLY QUANTIFY CAPABILITY--NOT THE INTENT OF SOVIET LEADERSHIP. BUT I CAN RELATE TO THEIR HISTORICAL PERFORMANCE--LITHUANIA, LATVIA, ESTONIA, HUNGARY, CZECHOSLOVAKIA, POLAND, AFGHANISTAN--AND NOW, SURROGATE ADVENTURISM IN LATIN AMERICA.

LET'S LOOK ELSEWHERE.....

ALTHOUGH THE U.S. HAS BEEN ABLE TO REDUCE ITS DEPENDENCE ON OIL IMPORTS FROM THE PERSIAN GULF, THE AREA IS STILL OF VITAL IMPORTANCE TO THE FREE WORLD.

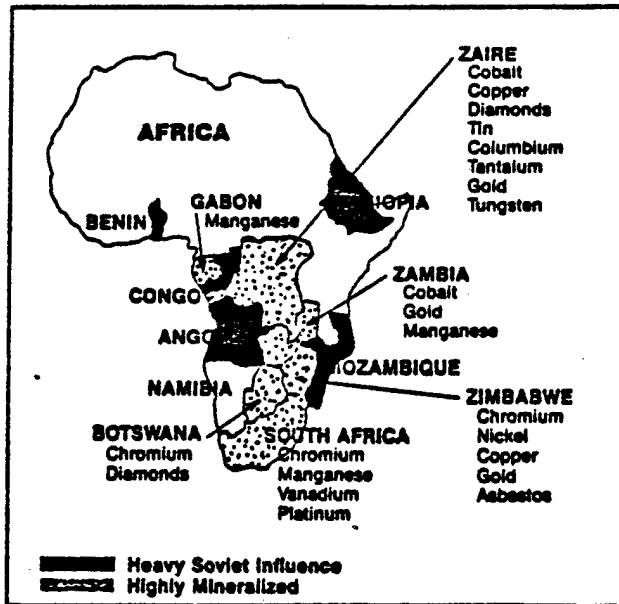


THIS CHART DEPICTS THE DEPENDENCE OF FOUR OF OUR ALLIES ON OIL THAT PASSES THROUGH THE STRAITS OF HORMUZ. THE PERCENTAGE SHOWN AFTER EACH COUNTRY REPRESENTS THE PORTION OF THEIR TOTAL DAILY CONSUMPTION OF PETROLEUM PRODUCTS THAT MUST PAST THROUGH THIS STRATEGIC WATERWAY.

IF THIS SUPPLY WERE SHUT OFF, IT WOULD REQUIRE AN IMMEDIATE, DRASTIC REDISTRIBUTION OF WORLD OIL SUPPLIES TO MAINTAIN MINIMUM ESSENTIAL FUNCTIONS. IT WOULD HAVE A DISASTROUS EFFECT ON THE ECONOMY OF THE WEST.

WESTERN ACCESS TO THE OIL-PRODUCING COUNTRIES OF THE PERSIAN GULF AND THE FREE, INTERNATIONAL STATUS OF THE STRAITS OF HORMUZ MUST BE MAINTAINED. THIS UNDERSCORES THE NEED FOR A MAJOR EXPANSION OF OUR AIRLIFT AND SEALIFT FORCES, BECAUSE WE DO NOT HAVE SUFFICIENT FORCES STATIONED IN THE PERSIAN GULF AREA TO STOP ANY SIZABLE AGGRESSION.

U.S. DEPENDENCE FOREIGN SOURCES FOR STRATEGIC MATERIALS



SOUTHERN AFRICA HAS:
 95% of the world's chrome
 86% of the world's platinum
 53% of the world's manganese
 64% of the world's vanadium
 52% of the world's cobalt

OPEC CONTROLS:
 52% of the world's oil

"Our aim is to gain control of...
 the mineral treasure house of central and
 southern Africa."

— Leonid Brezhnev
 1973

TOO GREAT A DEPENDENCE ON FOREIGN SOURCES FOR STRATEGIC MATERIALS AND FUELS PUTS OUR ECONOMY AND NATIONAL DEFENSE AT RISK. ALL TOLD, 36 STRATEGIC MINERALS ARE USED EXTENSIVELY BY U.S. INDUSTRY FOR MANUFACTURING. WE ARE CRITICALLY DEPENDENT ON FOREIGN COUNTRIES FOR OVER HALF OF THESE.

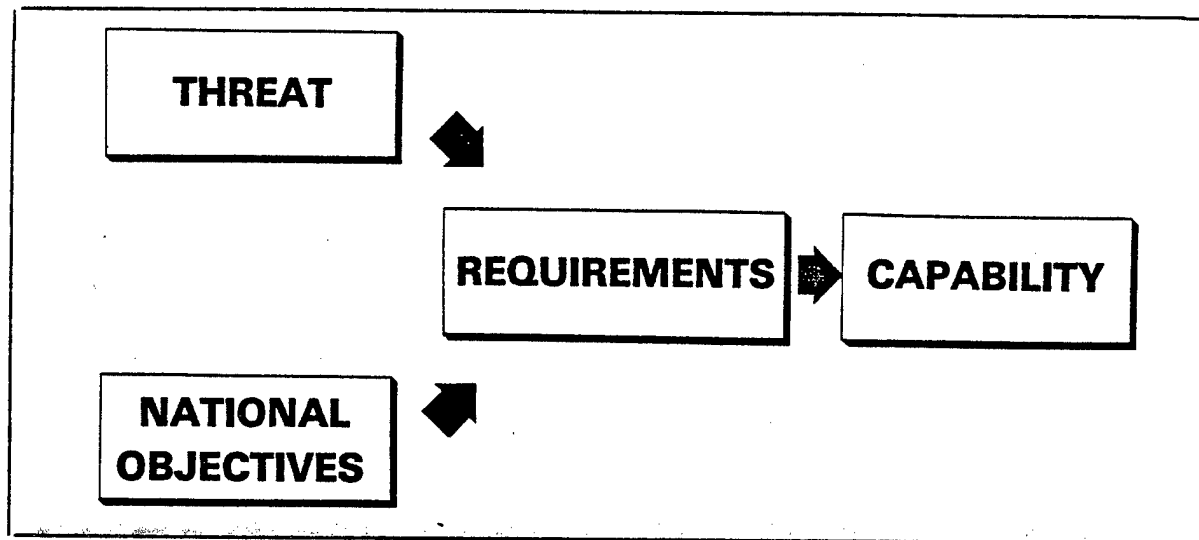
FOR EXAMPLE, WE HAVE NO DOMESTIC SUPPLIES OF MANGANESE OR COBALT WHICH ARE USED TO PRODUCE STEEL, JET ENGINES, NUCLEAR PROPULSION SYSTEMS, AND SYNTHETIC FUELS. OVER HALF THE WORLD'S SUPPLY OF THESE TWO MINERALS IS IN SOUTHERN AFRICA. WE NEED CHROMIUM FOR, AMONG OTHER THINGS, AEROSPACE COMPONENTS. WE IMPORT 92 PERCENT OF OUR CHROMIUM, AND SOUTHERN AFRICA HAS 95 PERCENT OF THE WORLD SUPPLY.

OUR MAIN SUPPLIERS OF MANY OF THESE MINERALS ARE THE SOUTHERN AFRICAN NATIONS --PRIMARILY SOUTH AFRICA--A REGION REFERRED TO AS THE "PERSIAN GULF OF MINERALS".

RUSSIAN INTENTIONS TOWARD THAT REGION AND THE PERSIAN GULF WERE STATED BY LEONID BREZHNEV IN 1973; "OUR AIM IS TO GAIN CONTROL OF THE TWO GREAT TREASURE HOUSES ON WHICH THE WEST DEPENDS: THE ENERGY TREASURE HOUSE OF THE PERSIAN GULF AND THE MINERAL TREASURE HOUSE OF CENTRAL AND SOUTHERN AFRICA."

THE CHALLENGE HAS BEEN ISSUED. OUR CHOICE IS TO PROVIDE THE MILITARY FORCES NEEDED TO PROTECT OUR INTERESTS OR TO RISK A REALLOCATION OF RESOURCES THAT WILL DRASTICALLY ALTER THE WAY WE AND OUR ALLIES LIVE.

The Threat Drives the Requirements



THIS NEXT CHART IS NOT AN ATTEMPT TO QUANTIFY OR ESPOUSE AIR FORCE DOCTRINE. IT SIMPLY IS A WAY OF ILLUSTRATING HOW IMPORTANT THE THREAT IS TO ANY DEFENSE ISSUE. NO FORECAST OF THE THREAT IS GUARANTEED ACCURATE, BUT IT CERTAINLY DOES PROVIDE INSIGHT INTO WHAT FORCES COULD THREATEN OUR FUTURE SURVIVAL. IT MUST BE ONE OF THE DOMINANT FACTORS THAT INFLUENCES THE FORMULATION AND EXECUTION OF NATIONAL AND DEFENSE STRATEGY.

NATIONAL OBJECTIVES AND THE THREAT ARE THE BASIS OF CONCEPTS, DOCTRINE, AND STRATEGY WHICH, IN TURN, DRIVE REQUIREMENTS. IT IS AT THIS JUNCTURE THAT WE DEFINE THE HARDWARE, LOGISTICS SUPPORT, AND MANPOWER SKILLS THAT MUST BE MADE AVAILABLE TO OUR COMMANDERS IN ORDER FOR THEM TO HAVE THE CAPABILITY TO SUCCESSFULLY CARRY OUT THEIR MISSIONS.

THE AIR FORCE IS NOT ENAMORED WITH TECHNOLOGY, AND IT CERTAINLY DOES NOT WANT TO BUY EXPENSIVE AND COMPLEX EQUIPMENT FOR ITS OWN SAKE. BUT IN MANY CASES, THE THREAT CAN BEST BE MET (IN SOME CASES CAN ONLY BE MET) BY DEVELOPING AND FIELDING WEAPON SYSTEMS THAT TAKE FULL ADVANTAGE OF THE STATE OF THE ART.

LET'S REMEMBER, THE INPUT WE DON'T CONTROL IS THE THREAT. SO, IF FOR BUDGETARY REASONS, OR ANY OTHER REASON, WE AS A COUNTRY CHOOSE NOT TO PURSUE THE PROGRAMS NEEDED TO SATISFY REQUIREMENTS, WE MUST ADJUST OUR NATIONAL OBJECTIVES OR FACE UP TO THE FACT THAT WE WON'T HAVE THE CAPABILITY TO SUPPORT THEM.

AIR FORCE REQUIREMENTS

- RESTORE ADEQUATE STRATEGIC AND THEATER NUCLEAR BALANCE
- DENY SOVIETS ANY PROSPECT OF VICTORY IN NUCLEAR CONFLICT
- FLEXIBLE EMPLOYMENT TO FULFILL MULTIPLE THEATER MISSIONS
- POSSESS SUFFICIENT RANGE AND AERIAL REFUELING CAPABILITY
- CONDUCT OPERATIONS AT NIGHT AND IN ADVERSE WEATHER CONDITIONS
- PENETRATE SOVIET DEFENSES TO DESTROY HEAVILY DEFENDED TARGETS
- READY AND CAN FIGHT AS LONG AND HARD AS NEEDED TO WIN

THIS CHART LISTS AIR FORCE REQUIREMENTS AS SUMMARIZED BY THE SECRETARY AND CHIEF OF STAFF OF THE AIR FORCE TO RESTORE THE NUCLEAR BALANCE and ASSURE THAT THE SOVIETS WILL NEVER THINK THEY COULD WIN A NUCLEAR WAR. WE ARE PLANNING TO DEPLOY MX MISSILES, B-1B BOMBERS, AND AIR AND GROUND LAUNCHED CRUISE MISSILES. WE ARE ALSO IMPROVING OUR COMMAND AND CONTROL COMMUNICATIONS AND INTELLIGENCE SYSTEMS AND UPGRADING OUR HOMELAND DEFENSES THROUGH IMPROVED WARNING SYSTEMS AND DEPLOYMENTS OF AWACS AIRCRAFT AND F-15 INTERCEPTORS.

WE MUST DEVELOP AND MAINTAIN THE FORCES NEEDED FOR THEATER MISSIONS--INCLUDING THE POTENTIAL NEED TO SIMULTANEOUSLY FIGHT IN MORE THAN ONE THEATER. TO PROVIDE THE CAPABILITY TO DEPLOY ANYWHERE IN THE WORLD, EVEN WHEN WE CAN'T USE EN ROUTE BASES; WE ARE PROCURING ADDITIONAL C-5s AND KC-10s, AND WE ARE REENGINEING OUR FLEET OF KC-135 TANKERS.

WE SHOULD BE ABLE TO OPERATE AT NIGHT AND IN ADVERSE WEATHER TO MAKE MAXIMUM USE OF OUR FORCES AND DENY THE ENEMY ANY SAFE OPERATING ENVIRONMENT. TO IMPROVE OUR AIR-TO-GROUND CAPABILITY, WE ARE DEVELOPING THE F-15E AND F-16E AND WILL PROCURE ONE OF THEM AFTER A COMPETITIVE FLYOFF. WE WILL ALSO PROCURE ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILES (AMRAAMs) AND OTHER ADVANCED WEAPONS TO IMPROVE THE EFFECTIVENESS OF EACH AIRCRAFT SORTIE.

FURTHERMORE, SO THE SOVIETS WILL KNOW THE THINGS THEY VALUE MOST WILL BE AT RISK IN A WAR, WE MUST BE ABLE TO PENETRATE THEIR DEFENSES AND DESTROY HEAVILY DEFENDED TARGETS. OUR CONTINUED IMPROVEMENTS IN ELECTRONIC COUNTERMEASURES AND OUR STEALTH TECHNOLOGY CONTRIBUTE TO SATISFYING THESE REQUIREMENTS.

IN SUM, WE NEED THE PEOPLE AND FORCES REQUIRED SO WE ARE READY AND ABLE TO FIGHT AS LONG AND AS HARD AS IT TAKES TO WIN. WE DON'T WANT TO FIGHT, BUT IF WE SATISFY THESE REQUIREMENTS IN THE EYES OF THE SOVIETS, WE WILL DETER ACTIONS WHICH THREATEN OUR VITAL INTERESTS AND PROTECT OUR FREEDOM WITHOUT USE OF FORCE.

Rationale for the B-1 Decision

I NOW WANT TO FOCUS ON A KEY INGREDIENT IN OUR DEFENSE MODERNIZATION PROGRAM--THE B-1B--AND DISCUSS SOME OF THE KEY RATIONALE BEHIND THE RECENT DECISION TO PRODUCE THIS NEW BOMBER.

B-1 DECISION

- TODAY'S B-1 IS NOT THE PLANE CANCELLED IN 1977
- B-1 AND ADVANCED TECHNOLOGY BOMBER (ATB) NEEDED
- WE CAN AFFORD THEM

IT IS EASY TO GET THE WRONG OPINION OF THE B-1 FROM THE NEWSPAPERS AND TELEVISION DUE TO STATEMENTS FROM WELL-MEANING, BUT ILL-INFORMED OR OUT-OF-DATE EXPERTS --OR FROM CRITICS WHO WILL USE ANYTHING THEY CAN TO FIGHT DEFENSE EXPENDITURES.

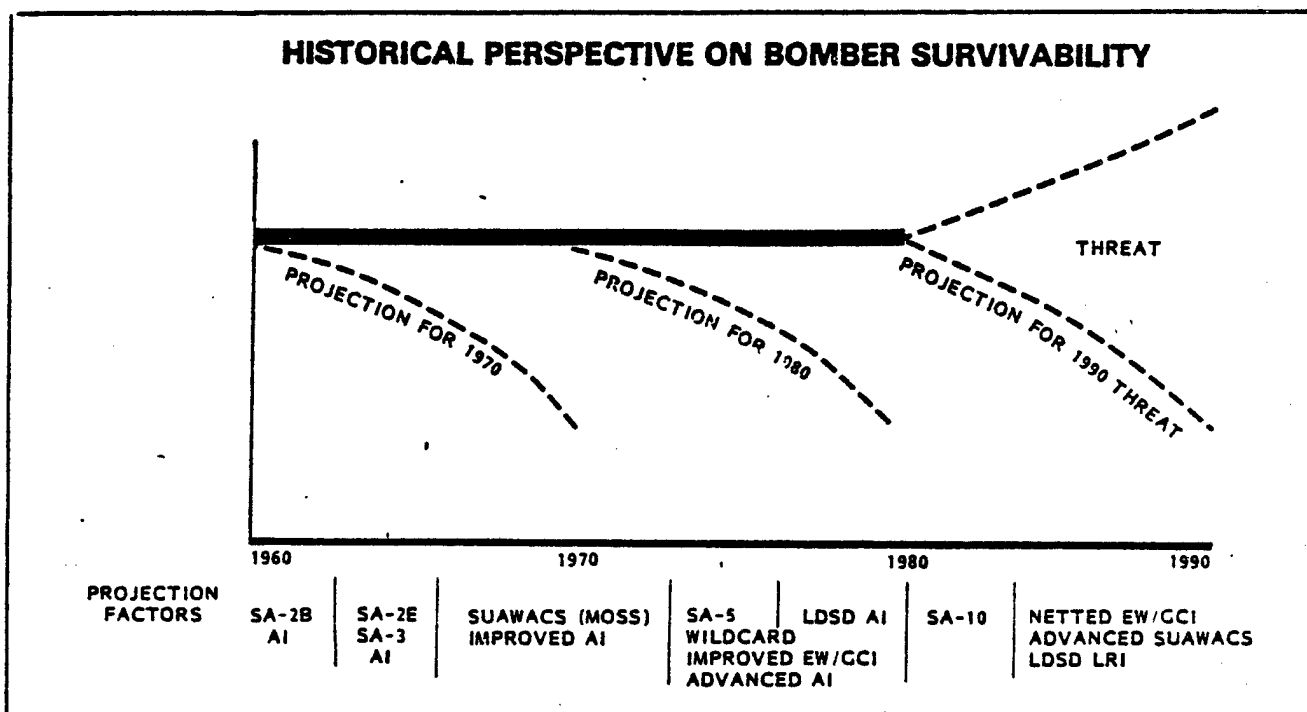
YOU WILL HEAR FROM MANY DETRACTORS OF THE B-1 DECISION; THEY WILL HAVE THREE BASIC COMPLAINTS. FIRST, THAT THE B-1 WAS CANCELLED IN 1977 BECAUSE IT WOULD NOT BE ABLE TO PENETRATE SOVIET DEFENSES. I WILL EXPLAIN HOW THINGS HAVE CHANGED SINCE THEN AND WHY WE NOW EXPECT THE B-1 WILL BE EFFECTIVE.

SECOND, SOME SAY THAT THE B-1 IS JUST AN INTERIM FIX AND THAT WE SHOULD SKIP IT AND GO STRAIGHT TO THE ADVANCED TECHNOLOGY BOMBER--WHICH I WILL CALL THE ATB. YOU CAN THINK OF THE ATB AS THE STEALTH BOMBER, ALTHOUGH THE DESIGN HAS BEEN CHANGED SINCE IT WAS FIRST ANNOUNCED. I WILL GIVE YOU THE REASONS WHY WE NEED BOTH PLANES AND EXPLAIN HOW THE B-1 WILL BE USED WHEN WE HAVE THE ATB.

THIRD, WE ARE BEING TAKEN TO TASK ON COSTS. I'M ALL FOR ELIMINATING UNNECESSARY GOVERNMENT COSTS, BUT I DON'T PUT THE B-1 IN THAT CATEGORY. I WILL GIVE YOU SOME COMPARATIVE COSTS SO YOU CAN MAKE YOUR OWN JUDGMENT ON WHETHER OR NOT THE U.S. CAN AFFORD TO MODERNIZE THE STRATEGIC BOMBER FORCE AS ANNOUNCED BY PRESIDENT REAGAN.

ON THE FIRST POINT--MUCH HAS CHANGED SINCE 1977 TO MAKE B-1 DEPLOYMENT A GOOD DECISION, ALTHOUGH IT WAS REJECTED FIVE YEARS AGO--ASIDE FROM THE FACT THAT OUR B-52s ARE ANOTHER FIVE YEARS OLDER, AND THEIR EFFECTIVENESS WILL BE SEVERELY LIMITED BY THE LATE EIGHTIES.

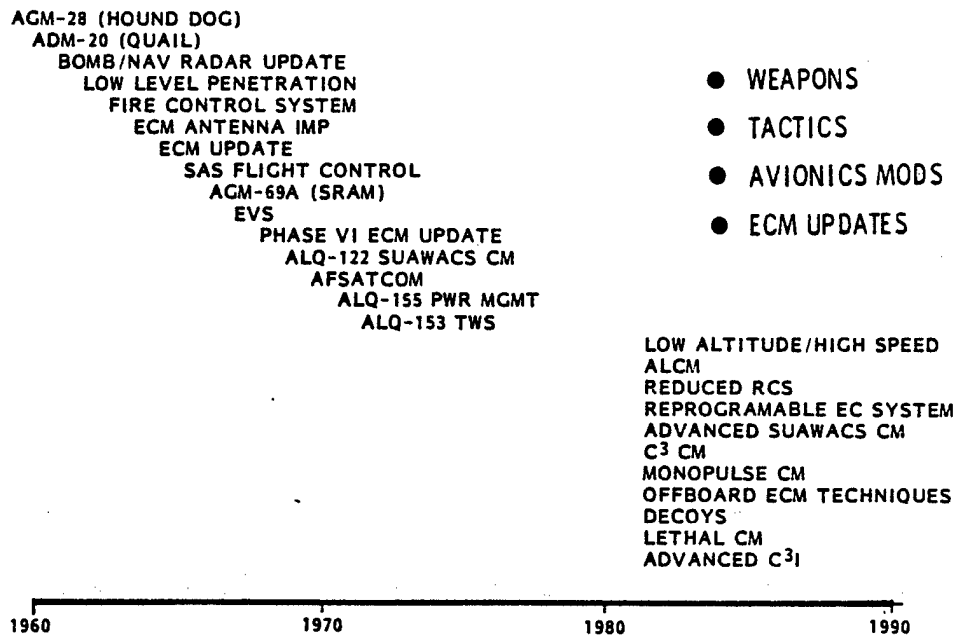
THE MOST DRAMATIC CHANGE IS IN TECHNOLOGY. WE ARE GOING TO USE NEW TECHNOLOGY TO MAKE THE RADAR CROSS SECTION (RCS) OF THE B-1 ONE TENTH AS LARGE AS IT WAS IN 1977 AND ONLY ONE-ONE HUNDREDTH THAT OF THE B-52. WHEN WE DO THAT, IT WILL BE HARDER FOR THE SOVIETS TO FIND OUR PLANES AND MUCH EASIER FOR US TO CONFUSE THEIR DEFENSES WITH ELECTRONIC COUNTERMEASURES (ECM). WITH THE B-1'S MUCH LOWER RADAR RETURN, ECM ALSO TAKES MUCH LESS POWER TO BE EFFECTIVE AND ALLOWS USE OF TECHNIQUES THAT ARE NOT FEASIBLE WITH THE B-52.



AS YOU CAN SEE FROM THE ABOVE CHART, IT SEEMS THAT WE ARE ALWAYS PREDICTING THAT DEFENSIVE IMPROVEMENTS WILL SEVERELY REDUCE OUR BOMBER SURVIVABILITY. SINCE THE EARLY SIXTIES, ANALYSES BASED ON INTELLIGENCE ESTIMATES HAVE PROJECTED THAT OUR ABILITY TO PENETRATE WOULD FALL OFF DUE TO NEW THREATS--SAMs, AWACS, INTERCEPTORS, ETC.

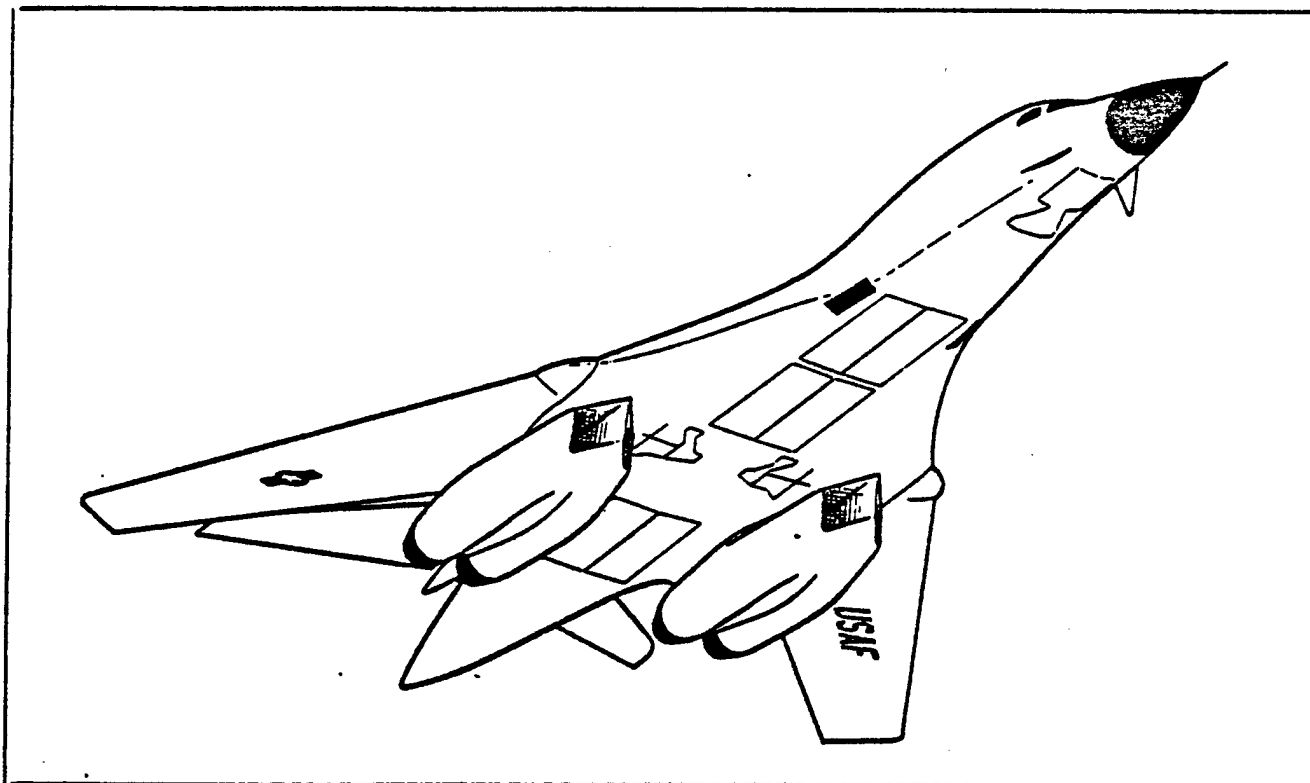
BUT, WE HAVE ALWAYS COME UP WITH A COUNTERMEASURE--A NEW JAMMER, A NEW TACTIC, OR SOMETHING WHICH ALLOWED US TO MAINTAIN OUR ABILITY TO AVOID, FOOL, OR SUPPRESS SOVIET DEFENSES. WE ARE CONFIDENT THE B-1 WILL FOLLOW THE SAME HISTORY.

BOMBER SURVIVABILITY INPUTS - A "COMBINATION"



THIS CHART SHOWS SPECIFIC EXAMPLES OF SYSTEMS AND TACTICS IMPLEMENTED OVER THE YEARS AS WELL AS A MENU, ON THE RIGHT, OF THE SURVIVABILITY TECHNIQUES THAT WILL SUSTAIN B-1 EFFECTIVENESS AS A PENETRATOR WELL INTO THE 1990s. THE DETAILS ARE NOT IMPORTANT, BUT YOU SHOULD REMEMBER THAT A WIDE VARIETY OF METHODS EXIST TO MAINTAIN B-1 EFFECTIVENESS AND PREVENT SOVIET DEFENSES FROM GAINING THE ADVANTAGE.

SINCE 1977, WE HAVE HAD SOME HIGHLY SIGNIFICANT BREAKTHROUGHS IN ECM TECHNOLOGY. IT'S NOW CLEAR THAT WE WILL DO FAR BETTER AGAINST SOVIET DEFENSES THAN WAS PREDICTED BY EVEN THE MOST OPTIMISTIC PROJECTIONS FROM 1977. AND, THESE ARE NOT JUST PAPER BREAKTHROUGHS. THEY HAVE BEEN TESTED ON THE B-1 AGAINST SURROGATE SOVIET SYSTEMS--AND THEY WORK.



ALMOST EVERYONE HAS SEEN PICTURES OF THE B-1. IT'S AN IMPRESSIVE PLANE, BUT THERE ARE SOME FEATURES THAT ARE NOT OBVIOUS. FOR EXAMPLE, THE B-1 CAN FLY LOWER AND MUCH FASTER THAN THE AGING B-52. SINCE 1977, WE HAVE ALSO MADE SOME DESIGN CHANGES WHICH IMPROVED THE SUBSONIC PERFORMANCE OF THE AIRCRAFT AND INCREASED THE PAYLOAD BY OVER 20 PERCENT. EACH PLANE CAN NOW DO A BIGGER AND BETTER JOB. OVERALL, THE CHANGES HAVE BEEN SO SIGNIFICANT THAT WE NOW CALL IT THE B-1B RATHER THAN B-1.

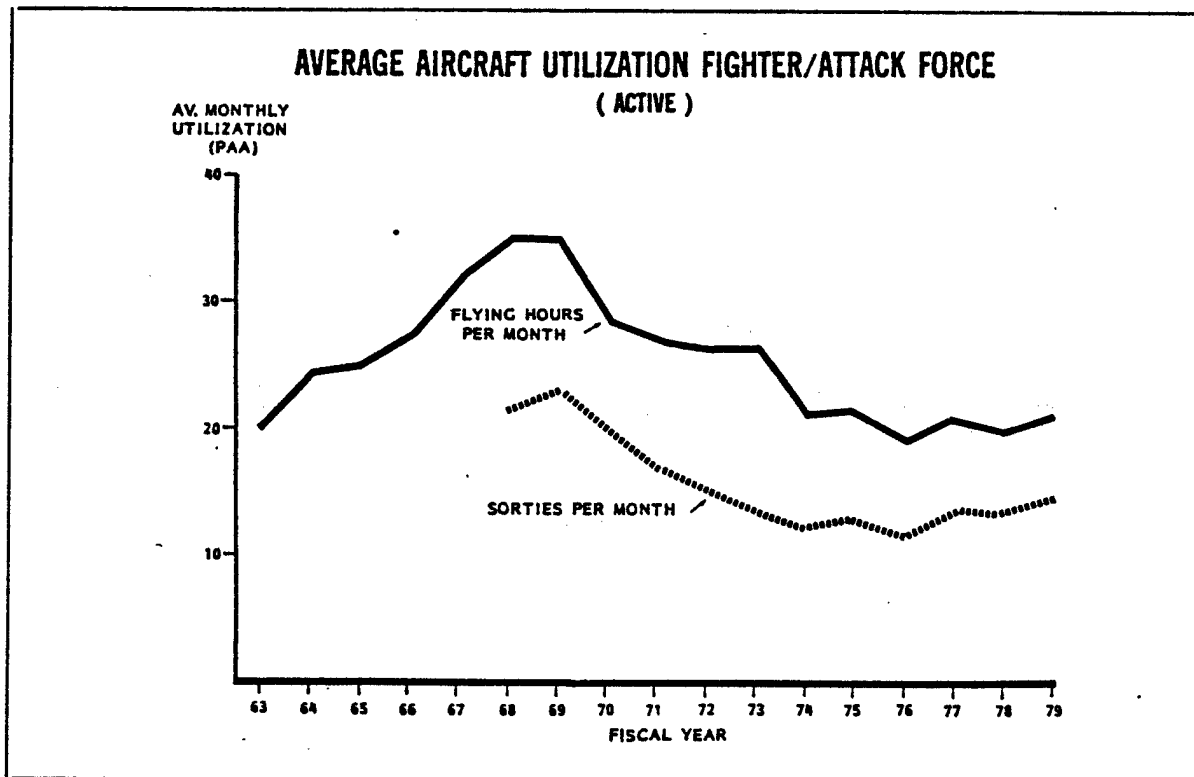
IN 1977, THE B-1 WAS ANALYZED AS IF IT HAD TO PENETRATE THE SOVIET UNION WITHOUT ANY BALLISTIC MISSILES BEING USED TO WEAKEN THE DEFENSES--AND WE HAD NO PLANS TO BUILD CRUISE MISSILES. NOW, OUR ANALYSIS CONSIDERS HOW OUR INTERCONTINENTAL AND SUBMARINE-LAUNCHED BALLISTIC MISSILES WILL WEAKEN THE SOVIET DEFENSES AND HOW CRUISE MISSILES WILL HELP SATURATE AND DILUTE ANY REMAINING DEFENSES. OVERALL, THE RESULTS TODAY ARE FAR BETTER THAN WE PROJECTED FOUR OR FIVE YEARS AGO.

ANOTHER BIG DIFFERENCE IN TODAY'S APPROACH IS THAT A BROAD RANGE OF MISSIONS WERE EXAMINED, RATHER THAN CONCENTRATING ON THE USE OF THE B-1 FOR A SINGLE, MASSIVE NUCLEAR ATTACK ON THE SOVIET UNION. THE PROPER WAY TO THINK OF THE B-1B IS AS A VERSATILE PLANE THAT CAN DELIVER A VERY LARGE PAYLOAD--NUCLEAR OR CONVENTIONAL, ANYWHERE IN THE WORLD, IN SPITE OF ANY MOVES TO STOP IT. IT IS SUPERBLY SUITED FOR POWER PROJECTION OR FOR A SHOW OF FORCE SHORT OF ACTUAL CONFLICT.

IT CAN PERFORM MARITIME MISSIONS OF SEA SURVEILLANCE, MINE LAYING, AND ANTI-SHIP WARFARE. OUR NAVAL FORCES CAN NOT COVER ALL AREAS OF THE GLOBE AT ONCE. THE B-1B CAN FURNISH FIREPOWER SIMILAR TO THAT OF A LARGE AIRCRAFT CARRIER WITH JUST A FEW SORTIES PER DAY UNTIL ARRIVAL OF NAVAL FORCES. IT CAN ALSO PROVIDE CONVENTIONAL FIREPOWER TO REMOTE AREAS TO SUPPORT ELEMENTS OF A RAPID DEPLOYMENT FORCE BEFORE THEY GAIN A FOOTHOLD, OR THE B-1B CAN COMPLEMENT ANY OTHER IN-PLACE FORCES, WORLD-WIDE.

Examples of Potentially Misleading Information

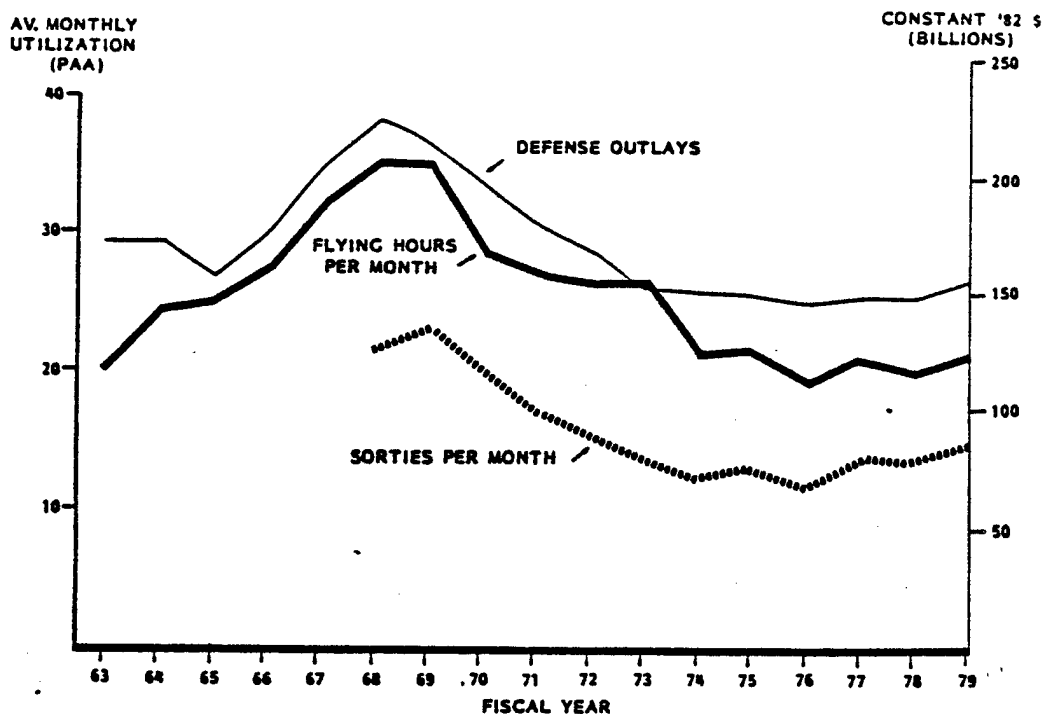
NOW, LET ME SHOW YOU SOME SPECIFIC EXAMPLES OF HOW INFORMATION CAN BE MIS-INTERPRETED IF IT IS APPROACHED FROM THE POINT OF VIEW THAT DEFENSE PROBLEMS STEM FROM COMPLEXITY. A NUMBER OF THE CHARTS I WILL DISCUSS, AS WELL AS OTHERS LIKE THEM, HAVE BEEN USED IN THE QUANTITY-QUALITY DEBATE AT HIGH LEVELS OF THE GOVERNMENT AND BEFORE THE AMERICAN PUBLIC.



THE USER OF THIS CHART WOULD HAVE US BELIEVE THAT COMPLEXITY HAS PROVIDED US LESS CAPABILITY FOR MORE MONEY. STARTING IN THE EARLY SEVENTIES, JUST AS WE BEGAN FIELDING A NEW GENERATION OF FIGHTER AND ATTACK AIRCRAFT, OUR UTILIZATION RATES BEGAN DROPPING. THIS CRITIC IMPLIES WE JUST HAVE NOT BEEN ABLE TO KEEP THOSE NEW PIECES OF HIGH TECHNOLOGY FLYABLE AT RATES AS HIGH AS THEIR PREDECESSORS.

IT'S INTERESTING TO NOTE THAT FLYING HOURS AND SORTIES ROSE DURING THE VIETNAM WAR WHEN, IF YOU BELIEVE IN THE EVILS OF TECHNOLOGY, THEY SHOULD HAVE FALLEN. HOWEVER, IT'S REALLY MORE IMPORTANT TO UNDERSTAND WHY FLYING HOURS HAVE DROPPED SINCE THE VIETNAM WAR.

AVERAGE AIRCRAFT UTILIZATION and U.S. DEFENSE OUTLAY



THIS IS THE SAME CHART, EXCEPT I HAVE OVERLAID IT WITH TOTAL U.S. DEFENSE OUTLAYS. IT ILLUSTRATES THE REAL REASONS FOR THE FLYING HOURS DROP, NAMELY THAT IT REFLECTS THE OVERALL DECREASE IN DEFENSE SPENDING AFTER THE VIETNAM WAR, A TIME DURING WHICH THERE WAS TREMENDOUS PRESSURE ON ALL MILITARY ACCOUNTS. WE SWITCHED TO THE ALL VOLUNTEER FORCE AND HAD TO ABSORB INCREASED COSTS TO PAY FOR PEOPLE. WE HAD TO REPLACE EQUIPMENT FROM VIETNAM. AND BEGINNING IN '73, FUEL COSTS INCREASED DRAMATICALLY, AFFECTING ENERGY COSTS IN GENERAL AND FLYING HOURS IN PARTICULAR. THE DROP IN FLYING HOURS WAS NOT DUE TO INCREASED COMPLEXITY, BUT RATHER TO BUDGETARY PRESSURE ON OVERALL DEFENSE SPENDING, INCLUDING READINESS, AND OPERATING AND MAINTENANCE (O&M) ACCOUNTS.

THERE ARE SEVERAL OTHER IMPORTANT POINTS THAT ARE OFTEN OVERLOOKED. FIRST OF ALL, THE AIR FORCE HAS DEMONSTRATED THAT ITS TWO MOST SOPHISTICATED PLANES, THE ALL-WEATHER, "COMPLEX" F-111s AND F-15s CAN EXCEED PLANNED SORTIE RATES WHEN THE PROPER LOGISTICS ARE AVAILABLE. DURING RECENT OPERATIONAL DEPLOYMENTS OVERSEAS, THE F-15 HAS FLOWN OVER THREE SORTIES PER DAY FOR TWO WEEKS, AND THE F-111 HAS DOUBLED ITS PLANNED WARTIME RATE.

EVEN THOUGH OUR COMPLEX WEAPON SYSTEMS HAVE PROVEN THEIR CAPABILITIES, THERE ARE SOME WHO ADVOCATE AN "INEXPENSIVE FORCE," COMPOSED OF DAY, CLEAR-WEATHER AIRCRAFT ONLY--NICE SIMPLE FIGHTERS. HOWEVER, THE SOVIETS WILL USE ALL-WEATHER OR NIGHT CAPABLE AIRCRAFT--ESPECIALLY IF OUR FORCES CAN'T RESIST THEM EFFECTIVELY. WE MUST NOT FAIL TO RECALL FROM THE HISTORY OF WAR THAT ARMIES MOVE FORWARD UNDER DARKNESS AND BAD WEATHER.

IN FACT, GERMAN SUCCESS IN THE BATTLE OF THE BULGE OCCURRED IN LARGE PART BECAUSE BAD WEATHER SHUT DOWN ALLIED AIR OPERATIONS. EVEN THOUGH WE DOMINATED THE SKIES WHEN WE COULD FLY, 9th AIR FORCE AIRCRAFT AVERAGED ONLY ONE SORTIE PER WEEK WHILE THIS CRUCIAL BATTLE RAGED UNABATED ON THE GROUND.

F-15s AND F-111s CONSTITUTE LESS THAN ONE FIFTH OF OUR FIGHTER FORCE. THAT SURELY DOESN'T SEEM UNREASONABLY HIGH TO ME FOR AN AROUND THE CLOCK, ALL-WEATHER CAPABILITY FOR AIR DEFENSE AND FOR AN ABILITY TO MOUNT OFFENSIVE OPERATIONS WITHOUT WAITING FOR DAYLIGHT OR GOOD WEATHER.

ANOTHER POINT IS THAT THE TRENDS IN FLYING HOURS BY THEMSELVES ARE NOT A GOOD MEASURE OF TRAINING, SINCE THEY DO NOT REFLECT THE CONTRIBUTIONS OF IMPROVING TRAINING PROGRAMS OR THE CHANGING TRAINING REQUIREMENTS TO MEET THE GROWING THREAT. THE AIR FORCE CONTINUALLY STRIVES FOR WAYS TO IMPROVE THE USE OF AVAILABLE FLYING HOURS. IT'S BEEN THESE INNOVATIONS AND IMPROVEMENTS IN OUR TRAINING PROGRAMS OVER THE LAST DECADE THAT HAVE MADE IT POSSIBLE TO MAINTAIN A HIGHER LEVEL OF COMBAT AIRCREW CAPABILITY THAN THE SIGNIFICANT REDUCTION IN FLYING HOURS WOULD INDICATE.

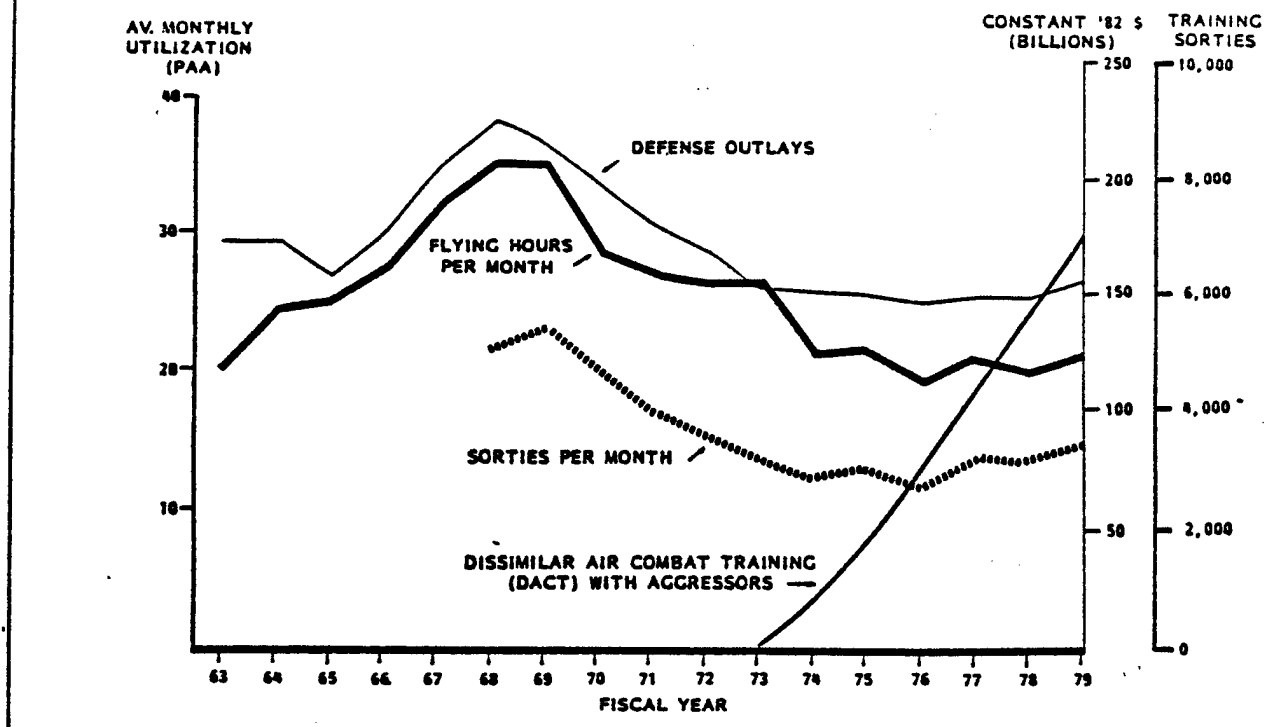
THE TECHNOLOGICAL IMPROVEMENTS IN NEWER AIRCRAFT WEAPON SYSTEMS HAVE ALSO AIDED US IN MAINTAINING OUR LEVEL OF TRAINING. FOR EXAMPLE, THE ELECTRONIC FLIGHT CONTROL SYSTEM ON THE F-16 ALLOWS AN INEXPERIENCED PILOT TO MANEUVER MORE SAFELY AND CONSISTENTLY AT THE HIGH TURN RATES NEEDED TO WIN IN COMBAT. THE FLIGHT CONTROL SYSTEM CAN ADJUST THE PILOT'S INPUTS TO PREVENT HIM FROM EXCEEDING THE MAXIMUM AERODYNAMIC PERFORMANCE LIMITS. THIS AVOIDS OVERSTRESSING THE AIRFRAME OR DEPARTURE FROM CONTROLLED FLIGHT. ALSO, THE CURRENT INERTIAL NAVIGATION SYSTEMS, HEAD-UP COCKPIT DISPLAYS, AND AUTOMATED MAPS MAKE IT POSSIBLE TO ACHIEVE A GIVEN LEVEL OF NAVIGATION PROFICIENCY WITHIN FEWER TRAINING HOURS.

THERE IS NO DOUBT THAT THE AIR FORCE HAS VASTLY ENHANCED ITS CAPABILITIES TO TRAIN REALISTICALLY. WE CONTINUE TO INCREASE OUR USE OF DEPLOYMENTS AND EXERCISES. INCREASED IN-THEATER TRAINING OF CONUS-BASED AIRCREWS IS VERY BENEFICIAL. THE AIR NATIONAL GUARD AND AIR FORCE RESERVE PARTICIPATED WITH THE ACTIVE AIR FORCE IN OVER 6,000 SORTIES LAST YEAR. OVER 6,400 PERSONNEL (AIRCREWS, MAINTENANCE, AND SUPPORT) WERE INVOLVED. IN 1981 THERE WERE ALSO 20 COMPOSITE FORCE EXERCISES CONDUCTED BY TACTICAL AIR FORCES. THIS IS A THREEFOLD INCREASE IN JUST THE LAST FOUR YEARS, WITH A PROGRAMMED DOUBLING OF SCHEDULED SORTIES FOR 1982.

BATTLE STAFF TRAINING DURING "BLUE FLAG" EXERCISES ENHANCES OUR CAPABILITY TO COMMAND AND CONTROL OUR TACTICAL FORCES. LESSONS LEARNED ALLOW BOTH THE AIRCREWS AND C³ FORCES TO SOLVE PROBLEMS PRIOR TO ACTUAL COMBAT. IN RECENT YEARS, WE HAVE CONDUCTED 15 FULL-SCALE EXERCISES AND TRAINED OVER 11,000 PEOPLE.

IN THE MID-SEVENTIES, WE BEGAN "RED FLAG" EXERCISES AT NELLIS AIR FORCE BASE IN NEVADA TO PROVIDE A MORE REALISTIC TRAINING ENVIRONMENT THAN HAD EVER BEFORE BEEN AVAILABLE TO TACTICAL AIRCREWS.

AVERAGE AIRCRAFT UTILIZATION and U.S. DEFENSE OUTLAY



THE ADDED LINE ON THE ABOVE CHART REFLECTS THE GROWTH IN RED FLAG AND SIMILAR EXERCISES THAT PROVIDE A PORTION OF THIS QUALITY COMBAT TRAINING. BY 1981, WE REACHED OVER 9000 SORTIES PER YEAR IN SIMULATED COMBAT AGAINST SURROGATE AGGRESSOR AIRCRAFT, AND WE PLAN TO MAINTAIN ABOUT THAT LEVEL IN THE FUTURE. PLUS, AIR FORCE UNITS, FLYING AMONG THEMSELVES, LOGGED ANOTHER 20,000 DISSIMILAR AIR COMBAT TRAINING (DACT) SORTIES DURING THE YEAR.

THE TECHNICALLY ADVANCED, AIR-TO-AIR TRAINING RANGES AVAILABLE AT RED FLAG AND OTHER LOCATIONS ARE JUST ONE ASPECT OF THE QUALITY TRAINING THAT ENABLES US TO MAKE EXTREMELY EFFECTIVE USE OF THE LIMITED FLYING HOURS CURRENTLY AVAILABLE.

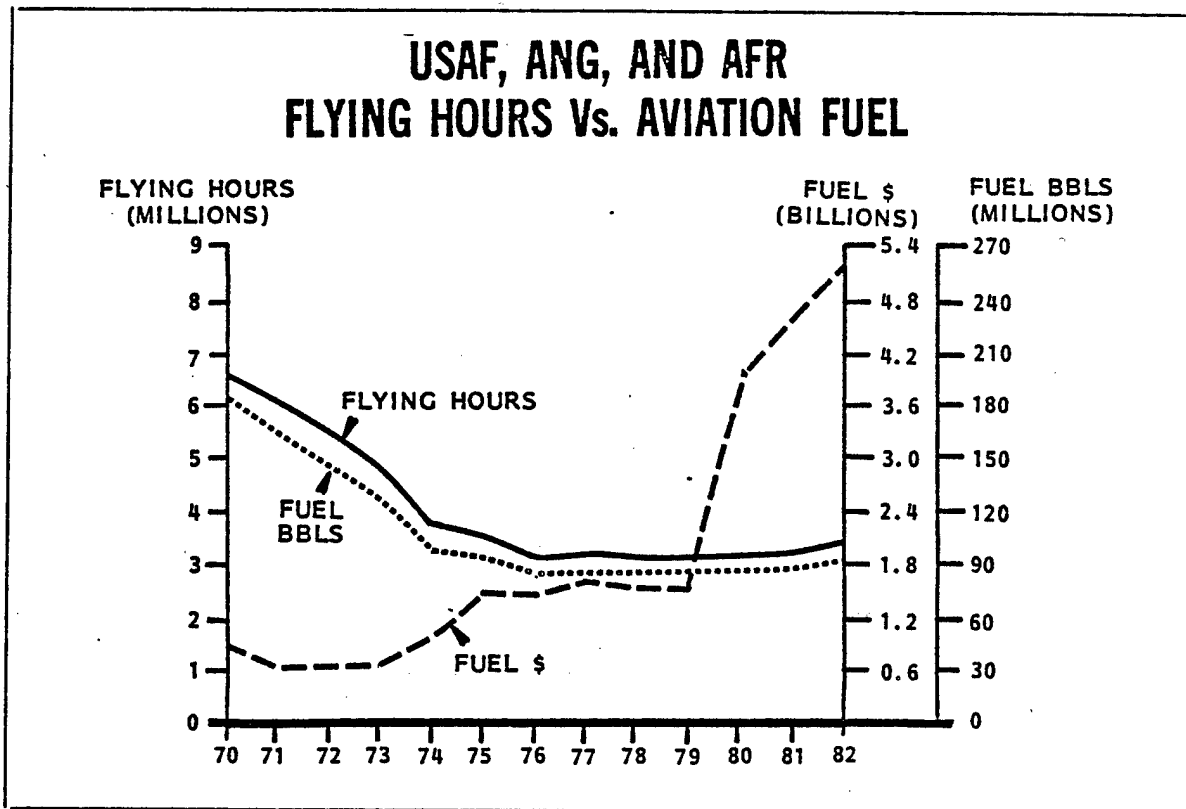
IN ADDITION, WE HAVE MADE GREAT STRIDES IN SIMULATORS, USING TECHNOLOGY THAT WAS NOT AVAILABLE BEFORE THE SEVENTIES, SO NOW OUR PILOTS GET BETTER TRAINING ON THE GROUND. THAT'S NOT REFLECTED AT ALL ON THE CHART.

THAT DOESN'T MEAN THAT WE ARE HAPPY WITH THE FLYING HOURS SITUATION--WE'RE NOT. MODERN TACTICAL AIR WARFARE CONTINUES TO BECOME MORE DEMANDING AND COMPLEX. MISSION TASKING IS INCREASING, AND MUCH OF THE EXECUTION IS VERY TIME-CRITICAL.

WE CAN'T FORGET IT IS STILL THE THREAT THAT DRIVES THE OVERALL LEVEL OF FLYING TRAINING REQUIREMENTS. OUR IMPROVEMENTS IN TRAINING ARE CONTINUING TO BE OFFSET BY THE INCREASING REQUIREMENT POSED BY THE GROWING THREAT.

THERE IS NO COMPLETE SUBSTITUTE FOR EXPERIENCE IN THE AIR. ADDITIONAL FLYING HOURS ARE DEFINITELY NEEDED, AND WE CONTINUE TO ARTICULATE THIS NEED. AN UPTURN CAN ALREADY BE SEEN ON THE CHART, WHICH WILL CONTINUE IF THE DEFENSE BUDGET GROWS AS PLANNED. OUR LIMITS ARE STRICTLY BUDGETARY, NOT TECHNOLOGY OR COMPLEXITY.

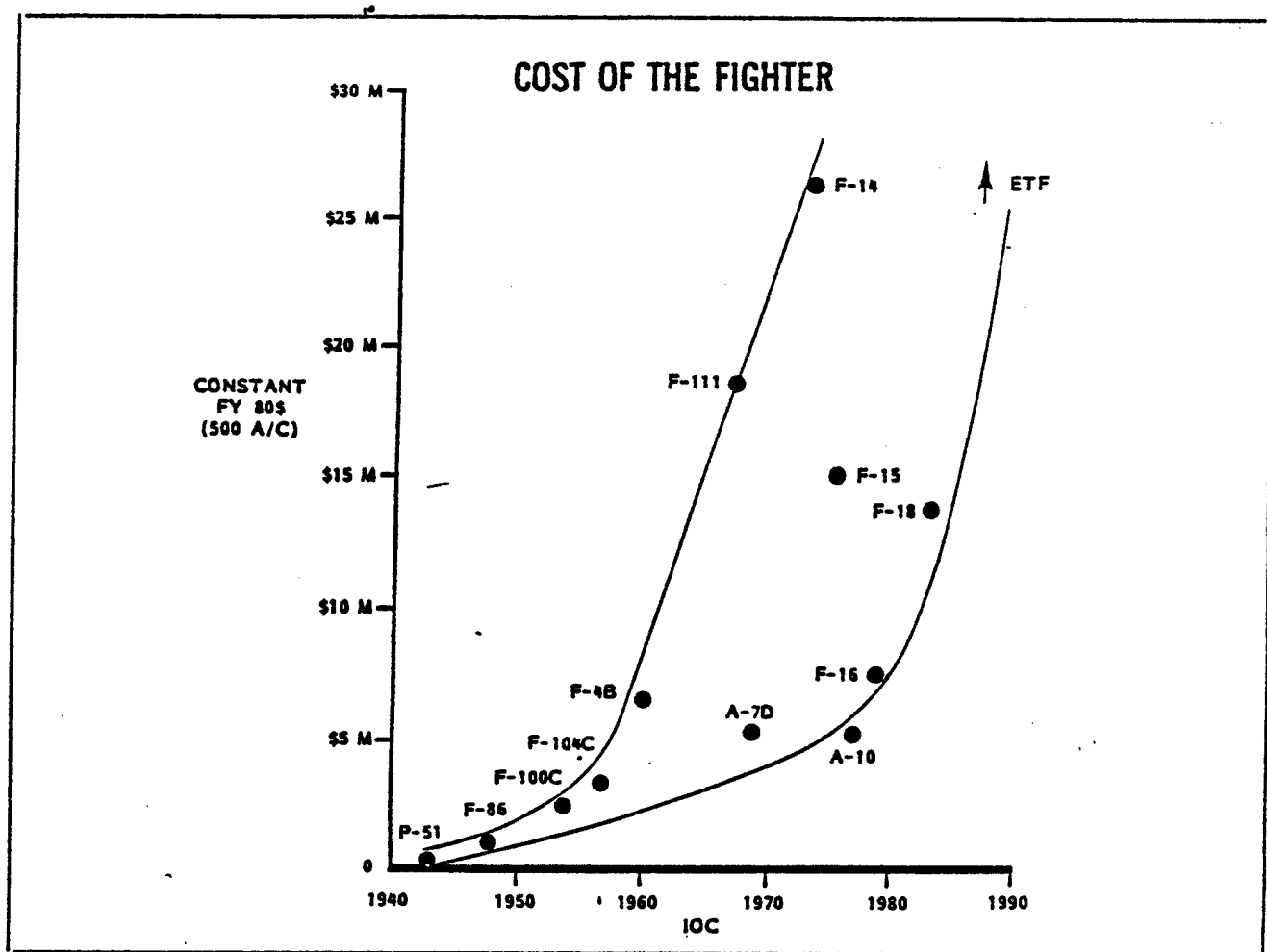
USAF, ANG, AND AFR FLYING HOURS Vs. AVIATION FUEL



THIS CHART SHOWS TOTAL AIR FORCE FLYING HOURS, FUEL USE, AND FUEL COSTS. YOU CAN SEE THAT TOTAL FLYING HOURS AND FUEL USE FOLLOW THE SAME PATTERN AS AVERAGE FLYING HOURS AND TOTAL DOD OR AIR FORCE OUTLAYS FROM THE EARLIER CHARTS.

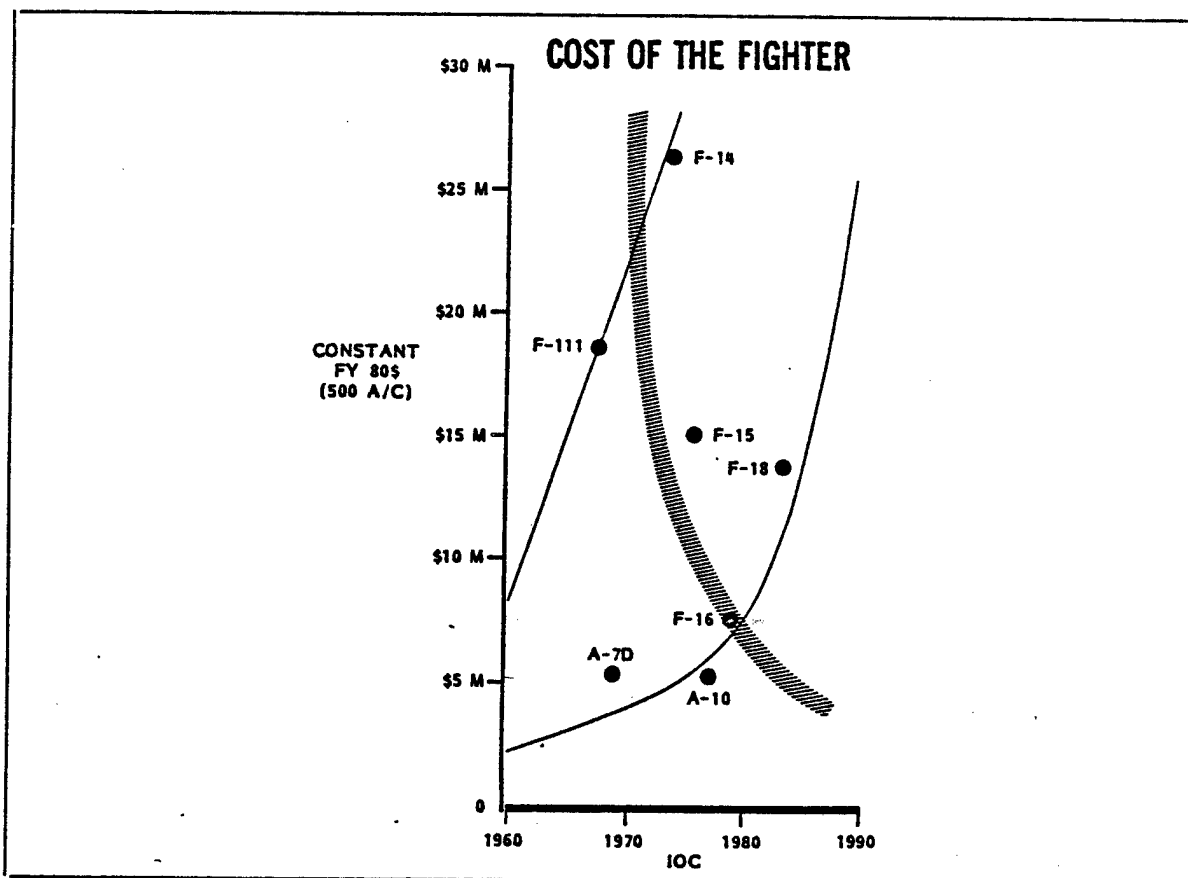
HOWEVER, THE TOTAL FUEL BILL HAS RISEN DRAMATICALLY SINCE THE EARLY SEVENTIES--AN EIGHTFOLD INCREASE TO OVER \$5 BILLION. FUEL COSTS HAVE, THEREFORE, BEEN USING AN INCREASING PORTION OF AIR FORCE FUNDS.

WHEN ALL THE PERTINENT INFORMATION IS PRESENTED, THE CONCLUSION IS NOT "COMPLEXITY REDUCES FLYING HOURS" AS SOME WOULD HAVE YOU BELIEVE. THE TRUE STORY IS THAT THE AIR FORCE HAS BEEN STRIVING TO MAINTAIN FLYING HOURS AND TRAINING IN THE FACE OF STRINGENT BUDGETING CONSTRAINTS.



NOW LET ME GIVE YOU AN EXAMPLE OF A "SO-CALLED" ANALYSIS WHERE HISTORICAL POINTS WERE SELECTED AND THEN PACKAGED FOR MAXIMUM VISUAL IMPACT. THE IMPRESSION FROM THE CHART IS THAT THE COST OF TACTICAL AIRCRAFT HAS BEEN INCREASING DRAMATICALLY AND IS HEADED OUT-OF-SIGHT. YOU SHOULD NOTE THAT THE "ANALYSIS" MIXES TYPES OF AIRCRAFT AND THAT THE TWO HIGHEST COSTS ARE FOR A PLANE WITH A HIGHLY SPECIALIZED, DEMANDING MISSION AND A PLANE THAT WAS NEVER BUILT.

IF YOUR ANALYSIS BEGINS WITH A POOR SELECTION OF DATA, THEN YOU CAN SHOW ANYTHING YOU WANT. THE NEXT CHART IS A GOOD EXAMPLE.



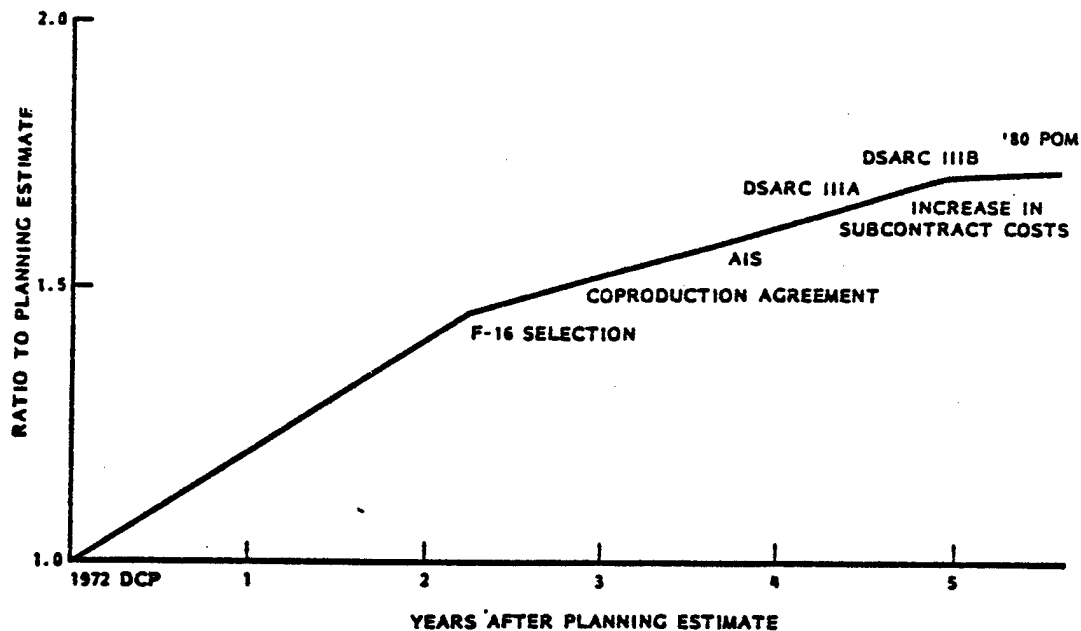
IF YOU THROW OUT THE ENHANCED TACTICAL FIGHTER, WHICH WASN'T BUILT, AND START THE ANALYSIS IN 1960, YOU WOULD CONCLUDE FIGHTER COSTS ARE STEADILY DECREASING.

OF COURSE, THAT'S NO MORE CORRECT THAN THE FIRST WAY. IN FACT, ITS WORSE SINCE COSTS PER AIRCRAFT ARE REALLY RISING. BUT, IT DOES ILLUSTRATE HOW AN AUDIENCE CAN BE MISLED BY MIXING MISSIONS, THROWING IN AIRCRAFT BUILT FOR HIGHLY SPECIALIZED MISSIONS OR NEVER BUILT AT ALL, AND SELECTING POINTS TO SUPPORT PRECONCEIVED POSITIONS. A PROPER ANALYSIS OF AIR-TO-AIR FIGHTER AIRCRAFT WOULD ACTUALLY SHOW AN ANNUAL COST GROWTH OF ABOUT 6 PERCENT--CONSIDERABLY LESS THAN THE IMPRESSION GIVEN BY THE CHART.

MORE IMPORTANT TO THE DECISION-MAKER IS AN UNDERSTANDING OF THE THREAT TO AND THE COST-EFFECTIVENESS OF EACH AIRCRAFT/WEAPON SYSTEM. AS TO THE THREAT, YOU MUST BE ABLE TO SATISFY MINIMUM REQUIREMENTS. FOR EXAMPLE, IF THE ENEMY HAS A BEYOND VISUAL RANGE MISSILE CAPABILITY (WHICH HE DOES), YOU MUST TOO--OR YOU MAY NEVER GET INTO VISUAL RANGE. IF YOU GET INTO A DOG-FIGHT, I AGREE YOU WANT A PLANE THAT CAN OUTFLY THE ENEMY, BUT YOU DON'T WANT TO TAKE A CHANCE ON GETTING BLOWN OUT OF THE SKY BEFORE YOU SEE HIM, AND YOU DON'T WANT HIM TO BE ABLE TO AVOID YOU BECAUSE HE CAN FIND YOU WHEN YOU CAN'T FIND HIM.

IN REALITY, WHEN YOU CONSIDER EFFECTIVENESS AND LIFE CYCLE COSTS, RATHER THAN JUST ACQUISITION COSTS, HIGHLY CAPABLE AIRCRAFT ARE COST-EFFECTIVE. MY PEOPLE MADE AN EXTENSIVE STUDY OF QUALITY AND QUANTITY AIRCRAFT IN A EUROPEAN SCENARIO. WE FOUND THAT, IF YOU REPLACED F-15s WITH AN EQUAL COST FORCE OF DAY, CLEAR WEATHER FIGHTERS, OUR OVERALL CAPABILITY TO FIGHT AND WIN ACTUALLY DECLINED EVEN THOUGH YOU COULD BUY THREE TO FOUR DAY FIGHTERS FOR THE COST OF AN F-15.

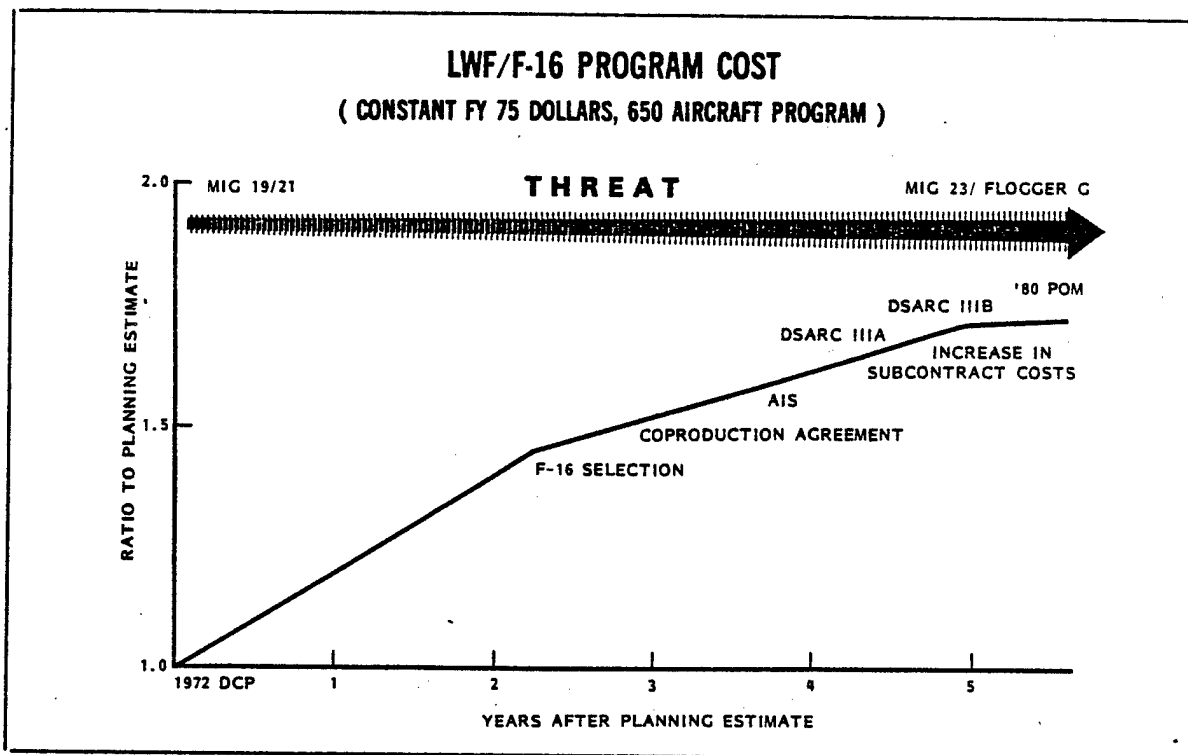
LWF/F-16 PROGRAM COST (CONSTANT FY 75 DOLLARS, 650 AIRCRAFT PROGRAM)



THIS CHART ADDRESSES A SINGLE WEAPON SYSTEM, THE LIGHTWEIGHT FIGHTER, OR LWF, PROGRAM THAT EVOLVED INTO THE F-16.

THE 1972 DECISION COORDINATING PAPER (DCP) THAT SERVED AS A POINT-OF-DEPARTURE FOR THE LWF CONCEPT WAS CHOSEN BY SOME CRITICS AS A BASELINE FOR COST COMPARISONS. FROM THAT POINT, COSTS APPEAR TO HAVE EXPERIENCED AN "UNCONTROLLED" 50% GROWTH IN ONLY TWO YEARS. THESE CRITICS WOULD ARGUE THAT THIS REFLECTS AN UNPLANNED INCREASE IN COMPLEXITY AND QUESTION WHETHER THERE WAS ANY REAL IMPROVEMENT IN CAPABILITY. IN FACT, THEY GIVE THE IMPRESSION THAT COMPLEXITY WILL ACTUALLY LOWER EFFECTIVENESS.

I WON'T ARGUE WITH THE DATA POINTS, BUT IF YOU WANT AN AUDIENCE TO FULLY UNDERSTAND WHAT IS REFLECTED ON THE CHART YOU SHOULD MAKE SURE THAT THEY UNDERSTAND THREE TRENDS THAT GENERALLY AFFECT ANY PROGRAM BETWEEN CONCEPTUAL DEFINITION AND DEPLOYMENT.



THE FIRST IS THAT THE THREAT CHANGES. IN 1972, THE THREAT WAS MIG-19s AND -21s; BUT, BY THE TIME OF THE F-16 PRODUCTION DECISION, WE WERE WORRIED ABOUT THE MIG-23 OR FLOGGER. AND, SINCE SOVIET AVIONICS AND MUNITIONS HAVE PROGRESSED OVER TIME, THE FLOGGER WILL HAVE THE FIRST SHOT OPPORTUNITY IN ENGAGEMENTS WITH F-16s.

THE SECOND TREND IS THAT OF INCREASING CAPABILITY AND EXPANDED MISSIONS OVER TIME. IN 1972, THE DCP DEFINED THE LOW SIDE OF A HIGH-LOW MIX AND SERVED AS THE BASIS FOR THE FLYOFF COMPETITION BETWEEN THE YF-16 AND YF-17. THE ULTIMATE PRODUCTION DESIGN FOR A FOLLOW-ON BUY WAS STILL IMMATURE. THE COMPETITION HIGHLIGHTED AERODYNAMIC PERFORMANCE IN A CLOSE IN, VISUAL TURNING ENGAGEMENT. AIR-TO-AIR CAPABILITY WAS THE PRIME CRITERIA.

HOWEVER, AS THE AIR FORCE BEGAN TO CONSIDER OVERALL FORCE STRUCTURE REQUIREMENTS FOR THE EIGHTIES, THE ROLE OF A F-16 TYPE AIRCRAFT TOOK ON ADDITIONAL DIMENSIONS. THE F-4 FLEET, WITH ITS AIR-TO-GROUND CAPABILITY, HAD BEEN AGED BY THE VIETNAM WAR AND NEEDED REPLACEMENT. THE F-16 WAS FOUND TO BE A SUITABLE AIRFRAME FOR THE JOB, AND IT'S ROLE WAS THUS EXPANDED FROM THE LOW END OF THE AIR-TO-AIR MIX TO INCLUDE A SIGNIFICANT AIR-TO-GROUND MISSION.

AS WITH MOST SYSTEMS, WE WILL CONTINUE TO IMPROVE THE F-16, BUT WE WILL DO IT BASED ON ANALYSIS AND REASONED JUDGMENT--NOT ON A BLIND PURSUIT OF NEW TECHNOLOGY.

THE THIRD TREND CONCERNS COST VERSUS COMMITMENT. PROGRAM DECISION POINTS ARE STRUCTURED TO DEFINE THE SYSTEM IN PROGRESSIVELY MORE AND MORE DETAIL BEFORE WE COMMIT TO LARGE EXPENDITURES. RATHER THAN USING THE DCP AS A STARTING POINT, IT WOULD HAVE BEEN BETTER TO START AT THE F-16 SELECTION POINT, WHEN WE AT LEAST KNEW WHICH PLANE WAS CHOSEN FOR DEVELOPMENT.

I WON'T DENY THAT PROGRAM COSTS INCREASE OVER TIME, BUT YOU CAN'T FREEZE COSTS AND PERFORMANCE AT THE POINT OF CONCEPT DEFINITION. AS THE THREAT CHANGES, WE INCORPORATE IMPROVEMENTS IN OUR SYSTEMS TO MAINTAIN THEIR EFFECTIVENESS. IT'S NOT FREE, BUT ITS GENERALLY THE CHEAPEST WAY TO MEET THE THREAT. IF WE WERE STILL FLYING B-52s AS THEY WERE CONCEIVED AFTER WORLD WAR II, I DOUBT IF THEY WOULD EVEN GET OFF THE RUNWAY, MUCH LESS PENETRATE SOVIET DEFENSES.

COMPLEXITY vs SIMPLICITY

IN THIS COUNTRY, THERE ARE A WIDE VARIETY OF VIEWS ON MILITARY PROGRAMS, BUT MOST CONFLICTING POSITIONS ARE BASED ON HONEST DIFFERENCES OF OPINION. WE CAN'T VIEW INFORMATION FROM THE SOVIET UNION IN THE SAME LIGHT. SOVIET INFORMATION IS ORCHESTRATED AND DESIGNED TO PROMOTE THEIR OBJECTIVES WITH LITTLE REGARD FOR THE TRUTH. THEY HAVE A WIDE VARIETY OF PUBLICATIONS AND ORGANIZATIONS THROUGHOUT THE WORLD TO DISSEMINATE THEIR PROPAGANDA AND ARE OFTEN HELPED BY UNWITTING ACCOMPLICES WHO DON'T REALIZE THEY ARE BEING GIVEN FALSE OR INACCURATE INFORMATION FROM SOVIET SOURCES. I CAUTION YOU THAT IF YOU ARE NOT CAREFUL IN CHOSING YOUR SOURCES OF INFORMATION, YOU CAN GET A VERY ROSY, BUT INACCURATE, VIEW OF THE SOVIET MILITARY THREAT.

WE CAN'T FORGET THE REALITY OF THE SOVIET THREAT WHEN WE ASSESS THE NEED FOR U.S. MILITARY PROGRAMS. IT IS AN INTEGRAL PART OF ANY PROPER DEFENSE ANALYSIS. AT THE SAME TIME, THE AIR FORCE LEADERSHIP FULLY SUPPORTS THE GOALS OF THOSE WHOSE LEGITIMATE EFFORTS SEEK REFORM IN THE DEFENSE ESTABLISHMENT TO ENHANCE OUR NATIONAL SECURITY IN AN AFFORDABLE WAY. UNFORTUNATELY, THE PATH TO IMPROVE DEFENSE SPENDING IS UNCLEAR, AND IT CAN BE OBSCURED FURTHER WHEN THE AMERICAN PUBLIC AND NATIONAL DECISION MAKERS ARE NOT GIVEN COMPLETE, ACCURATE, AND UP-TO-DATE INFORMATION.

IN THE RECENT PAST, MUCH HAS BEEN WRITTEN BY THE MEDIA ABOUT WEAPON SYSTEMS THAT HAVE BECOME TOO COMPLEX, AND IT HAS BEEN SUGGESTED THAT WE CHANGE OUR PROCUREMENT POLICIES TO BUY SIMPLER, BUT MORE, EQUIPMENT. IN MANY RESPECTS, OVEREMPHASIS ON THIS VIEWPOINT CAN MISLEAD DECISION MAKERS BY CONCENTRATING ON THE PROBLEMS OF HIGH-TECHNOLOGY SYSTEMS WITHOUT FULLY RECOGNIZING THEIR ASSOCIATED BENEFITS.

THE FOCUS OF THIS ACTIVITY IS THE QUALITY VS. QUANTITY ARGUMENT THAT HAS BEEN EXHAUSTIVELY DEBATED, NOT ONLY WITHIN THE DEFENSE ESTABLISHMENT BUT IN THE PUBLIC MEDIA AS WELL. AN IMPRESSIVE COLLECTION OF DATA AND FIGURES CAN BE ACCUMULATED TO SUPPORT THE CASE FOR MORE, SIMPLER SYSTEMS, AND IT CAN BE WELL-PACKAGED TO PERSUADE AN AUDIENCE THAT THE CONCLUSIONS ARE IRREFUTABLE.

IF THAT IS THE ONLY SIDE OF THE ARGUMENT PEOPLE SEE, THEY COULD COME TO VIEW TECHNOLOGY WITH SUSPICION AND DISTRUST. THEY WOULD PROBABLY SUPPORT CHANGING DEFENSE PROGRAMS IN WAYS THAT WOULD TRADE TECHNOLOGICAL SUPERIORITY AND ITS ATTENDANT COMPLEXITY FOR INCREASED QUANTITY AND ITS ASSUMED SIMPLICITY AND ASSUMED LOW COST.

THE SAME PEOPLE MIGHT WELL REACH DIFFERENT CONCLUSIONS IF THEY SAW BOTH SIDES OF THE STORY--AS THEY SHOULD IF OBJECTIVE ANALYSES WERE PRESENTED. BUT WHEN THEY SEE ONLY HALF OF THE STORY OR ARE DECEIVED BY THE ABUSE AND MISUSE OF DATA, OR WORSE LEGERDEMAIN, THEY CAN BECOME PREDISPOSED TO INTERPRET INFORMATION IN SUCH A WAY THAT IT REINFORCES A NEGATIVE VIEW OF COMPLEXITY.

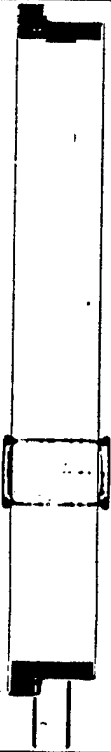
FOR A PROPER PERSPECTIVE ON THE QUALITY-QUANTITY ISSUE, ONE MUST BE CAUTIOUS OF BEING EXPOSED TO ONLY A SMALL VIEW OF THE ISSUE. THIS TENDS TO ISOLATE THE ANALYSIS FROM REALITY AND ENCOURAGES FACTS TO BE USED OUT OF CONTEXT.

ONE SHOULD LOOK OUT FOR SELECTED USE OF FACTS--USUALLY HISTORICAL INFORMATION SUPPORTED WITH THE ADMONISHMENT "LEARN FROM THE PAST--OR YOU ARE DOOMED TO

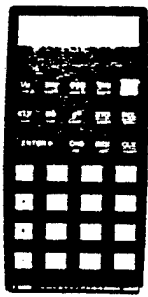
REPEAT IT." WITH SUFFICIENT DILIGENCE AND SELECTIVITY, EVERY ARGUMENT CAN BE SUPPORTED WITH HISTORICAL DATA.

FINALLY, SOME PRESENT US WITH A FALSE DILEMMA--A CHOICE BETWEEN QUALITY OR QUANTITY WITHOUT RECOGNIZING A PLACE FOR BOTH. THEN, THEY POINT OUT PROBLEMS WITH COMPLEX SYSTEMS AND OFFER THEM AS PROOF THAT WE SHOULD MOVE TO SIMPLE SYSTEMS WITHOUT EVER TRYING TO SHOW HOW THEY WILL SATISFY REQUIREMENTS. IN THE REAL WORLD THERE ARE PLACES FOR BOTH QUALITY AND QUANTITY SYSTEMS, AND THE THREAT DICTATES WHERE EACH IS BEST. BUT, WITH THE FALSE DILEMMA, THESE CRITICS AVOID HAVING TO SHOW HOW THEIR APPROACH TO WEAPON SYSTEM PROCUREMENT WOULD SATISFY REQUIREMENTS DICTATED BY THE SOVIET THREAT.

Complexity & Simplicity



**This is a
simple calculator**
(K & E Log Log Duplex Decoding)



**This is a complex
calculator**
(HP-21)

**Which would you rather have?
The answer depends on your
requirements and the
capabilities you want, not
simplicity vs. complexity.**

BEWARE THE SIREN SONGS

As the Fiscal Year '83 budget works through Congress, a seductive siren song of "defense on the cheap" will be heard. People in and out of Congress will advocate "simple solutions" to airpower requirements. The solutions will be cloaked in apparently accurate reams of data.

Beware the easy solutions. When couched in "Simplicity vs. Complexity" terms, they overlook a basic demand--that the US develop systems to conduct combat operations against a threat, not a dollar target.

For the Air Force, that means being able to win at night and in bad weather, not just daylight.

- THE EDITORS

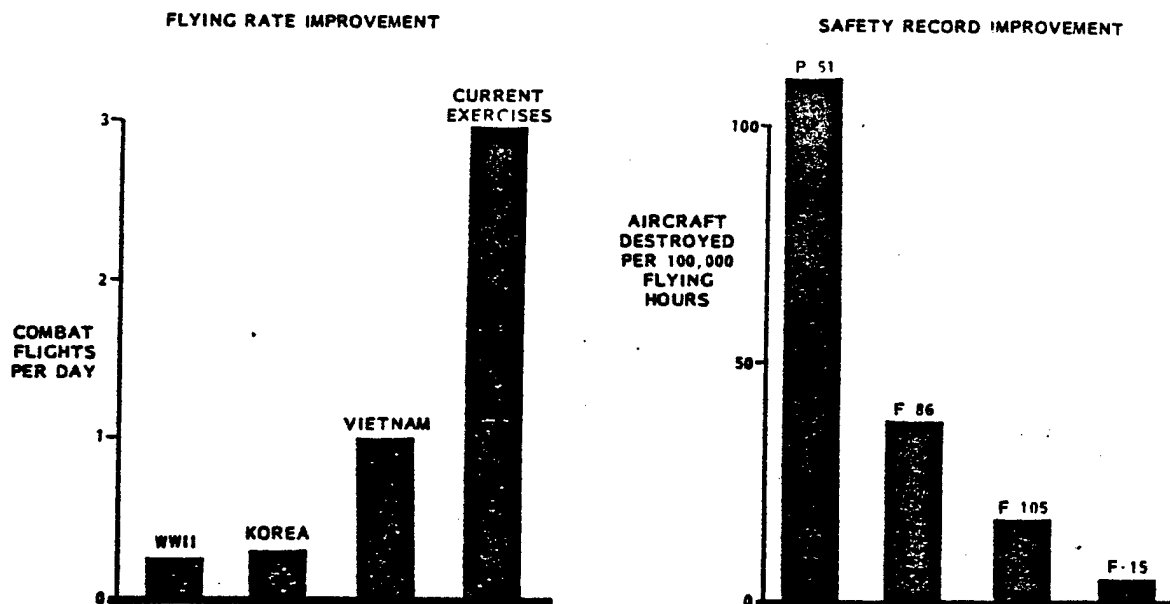
Source: Air Force Magazine, Mar '82, pg 13

THIS CHART GIVES A NON-MILITARY EXAMPLE OF COMPLEXITY VERSUS SIMPLICITY. THE SIMPLE SLIDE RULE IS RELIABLE, EASY TO MAINTAIN, AND DOES WHAT IT WAS DESIGNED FOR. HOWEVER, IT HAS BEEN REPLACED ALMOST COMPLETELY BY RELATIVELY COMPLEX HAND-HELD CALCULATORS--SOMEWHAT MORE EXPENSIVE TO BUY AND MAINTAIN, BUT ALSO MUCH FASTER AND MORE CAPABLE.

WHICH WOULD YOU RATHER HAVE? YOU WON'T SELECT BASED ON SIMPLICITY OR COMPLEXITY. YOU WILL CHOOSE THE ONE THAT BEST MEETS YOUR REQUIREMENTS.

SIMILARLY, WOULD YOU WANT A SUN DIAL OR A DIGITAL WATCH TO TELL TIME AT NIGHT OR DURING BAD WEATHER. IF WE EVER HAVE TO FIGHT THE SOVIETS, THEY WILL HAVE THE CAPABILITY TO FIGHT UNDER ALL CONDITIONS. RELYING ON SIMPLE, DAY-ONLY FIGHTERS IS LIKE CHOOSING TO STICK WITH THE SUNDIAL.

COMPLEX vs SIMPLE AIRCRAFT

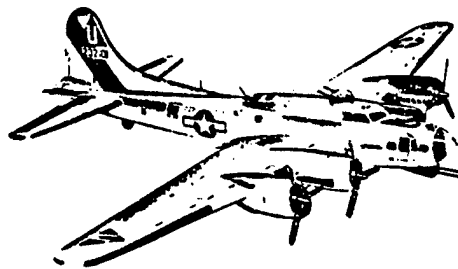


OFTEN WE HEAR THE CALL TO RETURN TO THE "GOOD OLD DAYS" WHEN MACHINES WERE MUCH SIMPLER AND MORE RELIABLE. CLOSE EXAMINATION OF THE FACTS SHOWS THAT MAYBE THE "GOOD OLD DAYS" WERE NOT REALLY THAT GOOD. DISPLAYED ON THESE TWO GRAPHS ARE A HISTORIC REPRESENTATION OF TWO VERY IMPORTANT FACTORS IN THE FIGHTER AIRCRAFT BUSINESS.

THE GRAPH ON THE LEFT DEPICTS THE AVERAGE NUMBER OF FLIGHTS FLOWN PER DAY BY FIGHTER TYPE AIRCRAFT DURING COMBAT OPERATIONS IN THE PAST. THE WWII, KOREA, AND VIETNAM FIGURES REPRESENT RATES ACHIEVED DURING COMBAT OPERATIONS. ALTHOUGH THEY REPRESENT A POSITIVE TREND THEY DO NOT COMPARE TO THE CURRENT CAPABILITY DISPLAYED BY F-15 AND F-16 AIRCRAFT IN SIMULATED COMBAT EXERCISES AND EVALUATIONS. THESE NEW, 'COMPLICATED', SYSTEMS HAVE DEMONSTRATED THE ABILITY TO DEPLOY TO DISTANT LOCATIONS AND MEET OR EXCEED THEIR PROGRAMMED WARTIME FLYING RATE.

FLIGHT SAFETY HAS BEEN A CONCERN SINCE THE FIRST MANNED FLIGHT. THE LOSS OF AN AIRCRAFT IN A TRAINING ACCIDENT IS VERY COSTLY IN TERMS OF EXPERIENCED MANNING AND EQUIPMENT. ONE MIGHT ASSUME THAT THE NEWER, MORE COMPLICATED, AIRCRAFT WOULD BE MORE DIFFICULT TO FLY AND MAINTAIN AND WOULD THEREFORE BE LESS SAFE TO FLY. THE FACTS SHOW THE OPPOSITE IS TRUE. THE GRAPH ON THE RIGHT DEPICTS THE HISTORICAL TREND IN THE SAFETY RECORD FOR FIGHTER AIRCRAFT. THE VERTICAL AXIS SHOWS THE NUMBER OF AIRCRAFT DESTROYED FOR EACH 100,000 FLYING HOURS FOR EACH SYSTEM.

THESE RATES REPRESENT NON-COMBAT LOSSES ONLY. THEY CLEARLY SHOW THAT THE NEWER, MORE CAPABLE, FIGHTER AIRCRAFT ARE MUCH SAFER THE THE OLDER, SIMPLER AIRCRAFT.



SCHWEINFURT RAID

IN 1943 IT TOOK 291 B-17s TO
TEMPORARILY REDUCE BALL-BEARING
PRODUCTION BY 67%



6 F-111s COULD DO THE SAME JOB FOR
AN INDEFINITE PERIOD

IN 1943 THE ALLIED LEADERSHIP EVALUATED ALTERNATIVE WAYS OF EMPLOYING THE BOMBER FORCE TO BRING THE GERMAN WAR MACHINE TO A HALT. IT WAS DECIDED THAT IF THE BALL-BEARING PRODUCTION COULD BE DISRUPTED, OR HALTED, IT WOULD HAVE A SERIOUS IMPACT UPON GERMAN CAPABILITY. THE DECISION WAS MADE TO ATTEMPT TO DESTROY THE PRODUCTION FACILITIES AT SCHWEINFURT.

TWO RAIDS WERE FLOWN AGAINST THE BALL-BEARING FACTORIES, ONE IN AUGUST AND THE SECOND IN OCTOBER. THE SECOND RAID CONSISTED OF A TOTAL OF 291 B-17s. OF THIS NUMBER ONLY 228 MADE IT TO THE TARGET AREA AND DROPPED BOMBS. IT HAS BEEN ESTIMATED THAT THIS RAID EFFECTIVELY DESTROYED 67% OF THE PRODUCTION CAPABILITY FOR A LIMITED PERIOD OF TIME. THIS PROVED TO BE A VERY COSTLY MISSION AS 60 B-17s DID NOT RETURN, 17 B-17s RETURNED BUT WERE DAMAGED BEYOND REPAIR, AND 121 B-17s RECEIVED SOME BATTLE DAMAGE. ALSO, 51 OF 1300 FIGHTER ESCORTS WERE DESTROYED.

IF YOU WERE TO EVALUATE THE CAPABILITY TO ACCOMPLISH THE SAME LEVEL OF DAMAGE WITH A MODERN WEAPONS SYSTEM YOU WOULD GET SOME STARTLING RESULTS. BECAUSE OF IMPROVEMENTS IN RANGE, PAYLOAD, AND BOMBING ACCURACY, YOU COULD DELIVER THE SAME TONNAGE ON TARGET WITH ONLY 6 F-111 FIGHTER BOMBERS. IN ADDITION, YOU COULD REPEAT THIS RAID PERIODICALLY REGARDLESS OF THE WEATHER, TO INSURE THE FACTORIES STAYED CLOSED.

FOR THOSE SKEPTICS THAT SAY THAT THE DEFENSES HAVE IMPROVED JUST AS FAST AS THE BOMBER CAPABILITY, IT IS INTERESTING TO NOTE THAT AT THE SAME (ALBEIT UN-ACCEPTABLE) LOSS RATES IT WOULD ONLY TAKE 8 F-111s TO ACCOMPLISH THE MISSION. HOWEVER, EVEN AGAINST TODAY'S DEFENSES, WE WOULD EXPECT THE F-111 WITH ITS ELECTRONIC COUNTERMEASURES AND PENETRATION TACTICS TO SUFFER LESS ATTRITION THAN THE B-17 DID--AND IT DOESN'T USE A FIGHTER ESCORT.

Examples Where Quality (Complexity) Count

THAHN HOA BRIDGE CAMPAIGN

	<u>GENERAL PURPOSE BOMB</u>	<u>GUIDED MUNITION</u>
SORTIES	873	8
AIRCRAFT LOSSES	11	0
SUCCESS	NO	YES

LET ME GIVE YOU AN EXAMPLE OF THE PAYOFF OF A QUALITY WEAPON, USING THE CAMPAIGN AGAINST THE THAHN HOA BRIDGE IN VIETNAM.

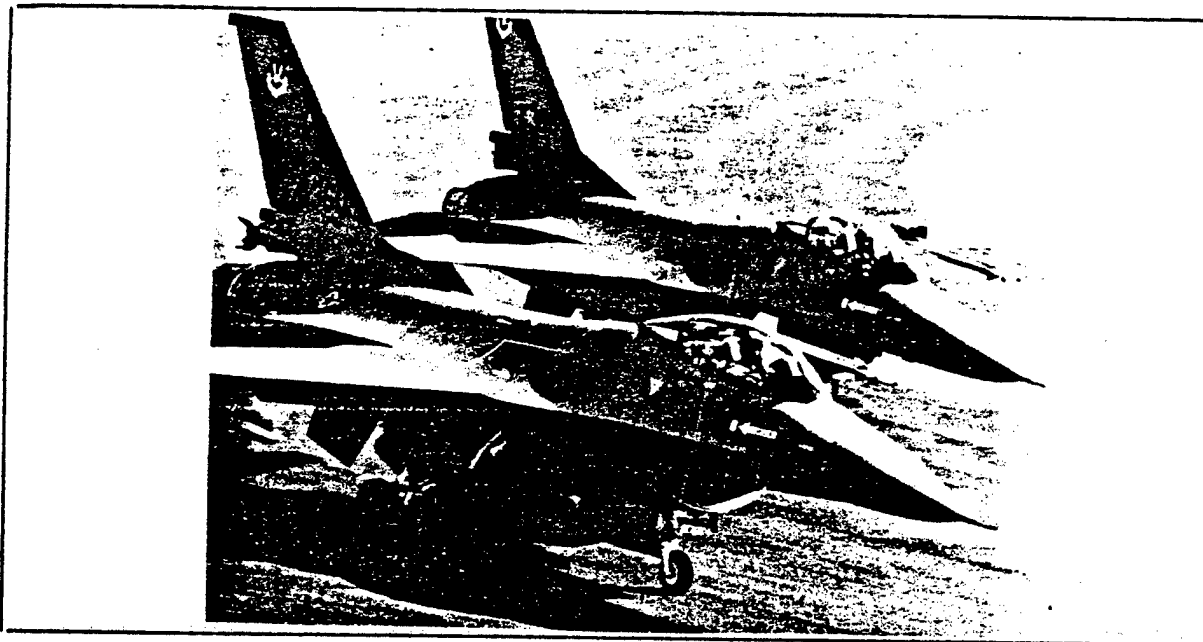
WITH DUMB, UNGUIDED BOMBS, WE FLEW 873 SORTIES AGAINST THE THAHN HOA BRIDGE, LOST 11 PLANES, AND CONTINUALLY FAILED TO DO THE JOB. WHEN WE GOT LASER GUIDED BOMBS, EIGHT F-4s WITH TWO BOMBS EACH DESTROYED THE BRIDGE IN ONE MISSION WITH NO LOSSES. IF YOUR MEASURE OF EFFECTIVENESS IS TO GENERATE SORTIES, THEN LARGE QUANTITIES OF DUMB BOMBS IS THE WAY TO GO. BUT, IF YOU WANT TO KILL BRIDGES, OTHER HARD TARGETS, OR WELL DEFENDED TARGETS, SMART WEAPONS ARE GOING TO BE MORE COST EFFECTIVE; AND, WE COULD HAVE USED THE REMAINING 865 SORTIES FOR OTHER CRITICAL MISSIONS--NOT TO MENTION THE PLANES AND PILOTS WE WOULD HAVE SAVED.

WITH ENOUGH TIME AND MONEY, WE COULD HAVE DESTROYED THE BRIDGE WITH DUMB BOMBS. SOME JOBS, HOWEVER, JUST CAN'T BE DONE WITHOUT SMART WEAPONS.

IN NORTH VIETNAM, THERE WAS A POWER STATION WE WANTED TO TAKE OUT, BUT IT WAS NEAR A DAM, AND IT WAS OUR POLICY NOT TO DESTROY DAMS DUE TO THE RESULTING DAMAGE TO CROPS AND OTHER NON-MILITARY TARGETS. THE POWER STATION REMAINED UNTOUCHED UNTIL WE GOT SMART BOMBS. THEN, IT WAS DESTROYED IN THE FIRST MISSION AGAINST IT.

ON THE OTHER HAND, THERE ARE JOBS WHICH DUMB BOMBS ARE SUITED TO HANDLE. AS YOU MOVE TO SOFTER, WIDE-AREA TARGETS OR UNDEFENDED TARGETS, THEY BECOME MORE COST-EFFECTIVE--ESPECIALLY WHERE QUALITY AIRCRAFT AVIONICS ARE USED TO IMPROVE DELIVERY ACCURACY.

THE BOTTOM LINE IS THAT A HIGH-LOW MIX OF WEAPONS IS THE MOST COST-EFFECTIVE APPROACH TO COUNTERING A SPECTRUM OF THREATS, AND YOU CAN'T FOREGO THE HIGH END OF THE MIX BECAUSE THE ENEMY WILL TAKE ADVANTAGE OF YOUR WEAKNESS AND ATTACK WHEREVER YOU LEAVE AN OPENING.



NOW THAT THE F-16 IS DEPLOYED WE CAN EACH DECIDE FOR OURSELVES ON WHETHER OR NOT COMPLEXITY HAS LOWERED THE F-16'S EFFECTIVENESS.

IN JUNE 1981, THE F-16'S DEBUT IN INTERNATIONAL GUNNERY COMPETITION IN SCOTLAND ACHIEVED OUTSTANDING RESULTS. MUCH CREDIT CAN BE GIVEN TO TOP-NOTCH PERSONNEL, HARD TRAINING, AND SOUND PLANNING, BUT THE F-16 TECHNOLOGY AND SUPERIOR PERFORMANCE WERE INSTRUMENTAL IN DEFEATING THE FOUR OTHER TEAMS (RAF JAGUARS AND BUCCANEERS AND USAF F-111S) IN THIS DEMANDING TACTICAL BOMBING COMPETITION. KEEP IN MIND, COMPETITION SORTIES WERE FLOWN AS CONVENTIONAL ATTACKS AGAINST RUNWAY AND BATTLEFIELD TARGETS.

THE F-16S WON THE COMPETITION BY A WIDE MARGIN. SIXTEEN COMPETITIVE SORTIES WERE FLOWN OVER FOUR DAYS, WITH NONE LOST FOR MAINTENANCE PROBLEMS. THE AIRCRAFT'S COMPUTED BOMBING SYSTEM WAS PUT TO THE TEST AND PERFORMED MAGNIFICENTLY. THE F-16 TEAM ACHIEVED NEAR PERFECT BOMBING POINTS ON EVERY MISSION--THE ONLY TEAM TO DO SO.

IN THE COMPETITION, THE F-16 TEAM WAS ALSO THE ONLY TEAM ABLE TO OFFENSIVELY DEFEND ITSELF AGAINST ADVERSARY INTERCEPTORS. THE F-16 TEAM EFFECTIVELY EMPLOYED THIS TACTICAL ADVANTAGE, ACHIEVING 88 KILLS WHILE SUFFERING ONLY NINE LOSSES. (BECAUSE OF COMPETITION RULE ARTIFICIALITIES, ALL NINE KILLS TAKEN AGAINST THE F-16S WERE CLAIMED BY ADVERSARIES WHO HAD ALREADY BEEN KILLED.)

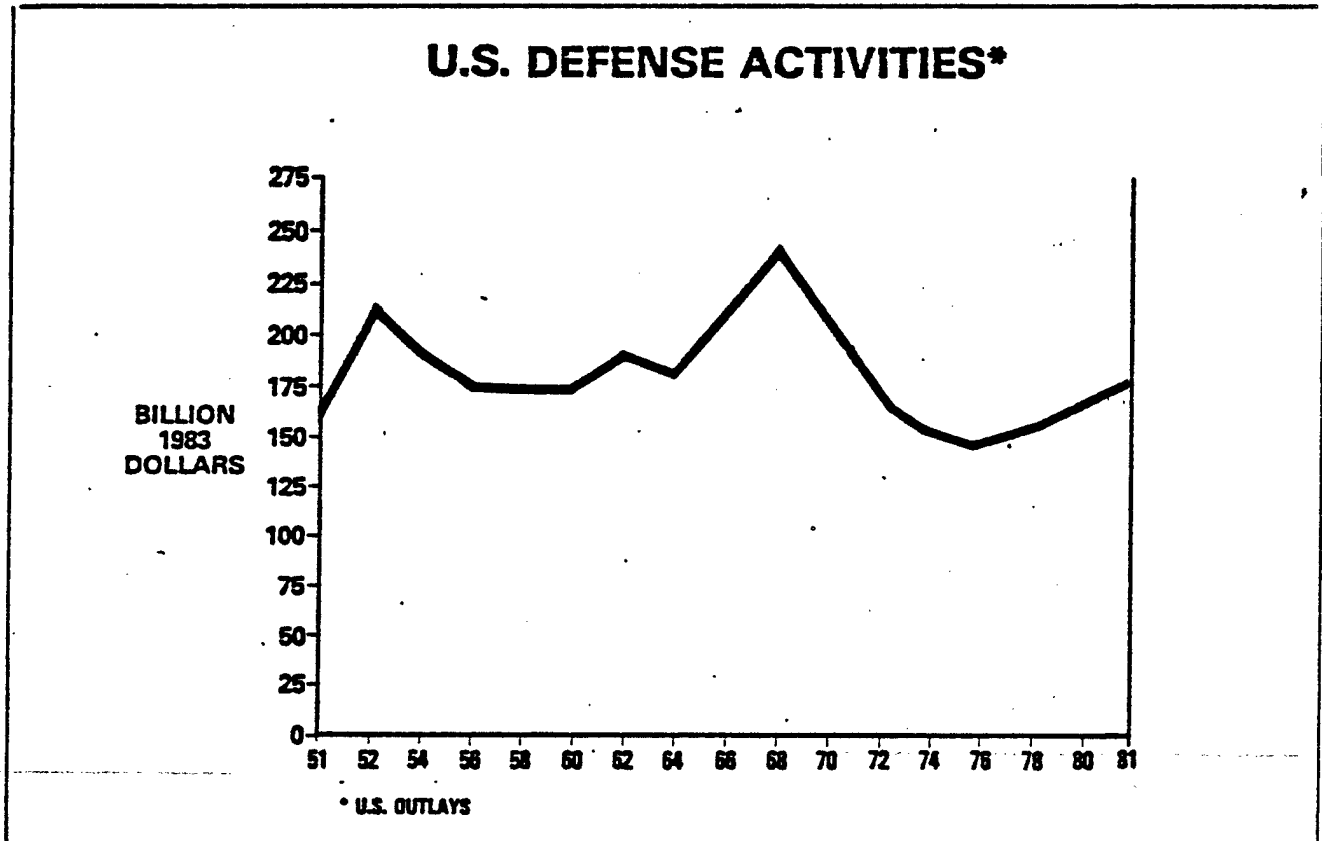
THE F-16'S EFFECTIVENESS AGAINST THE HIGHLY RESPECTED BRITISH RAPIER POINT AIR DEFENSE SYSTEM IS ATTRIBUTED TO ITS AVIONICS, VERSATILITY, AND SUPERIOR AIRCRAFT HANDLING QUALITIES. SINCE THE F-16 WEAPONS DELIVERY SYSTEM WAS ACCURATE AND EASY TO USE, MAXIMUM TIME WAS SPENT TERRAIN MASKING DUE TO THE MINIMUM TIME NEEDED TO ACQUIRE THE TARGET, TRACK, AND EMPLOY THE WEAPONS.

THE F-16 TEAM ALSO HAD THE FASTEST POST-MISSION OPERATIONAL QUICK TURN TIMES--AVERAGING 10.5 MINUTES. THE TIMING INCLUDED A WEAPON LOADOUT OF SIX 500-POUND GENERAL PURPOSE BOMBS AND 500 ROUNDS OF 20-MM AMMUNITION, AS WELL AS AIRCRAFT SERVICING AND PILOT INSPECTIONS.

Defense Costs

LET ME NOW TURN TO DEFENSE COSTS. IT HAS BEEN ARGUED THAT THE MILITARY BUDGET IS MORE OR LESS FIXED AND THAT--IN SPITE OF ANY SOVIET THREAT OR U.S. MILITARY REQUIREMENTS--WE SHOULD ACCEPT CURRENT BUDGET LEVELS. THEN, SINCE WE CAN'T AFFORD THE QUALITY FORCES WE NEED, WE SHOULD BUY GREATER NUMBERS OF SIMPLE FORCES.

LET'S EXPLORE THE IMPLICATIONS OF THAT ASSUMPTION A LITTLE FURTHER.

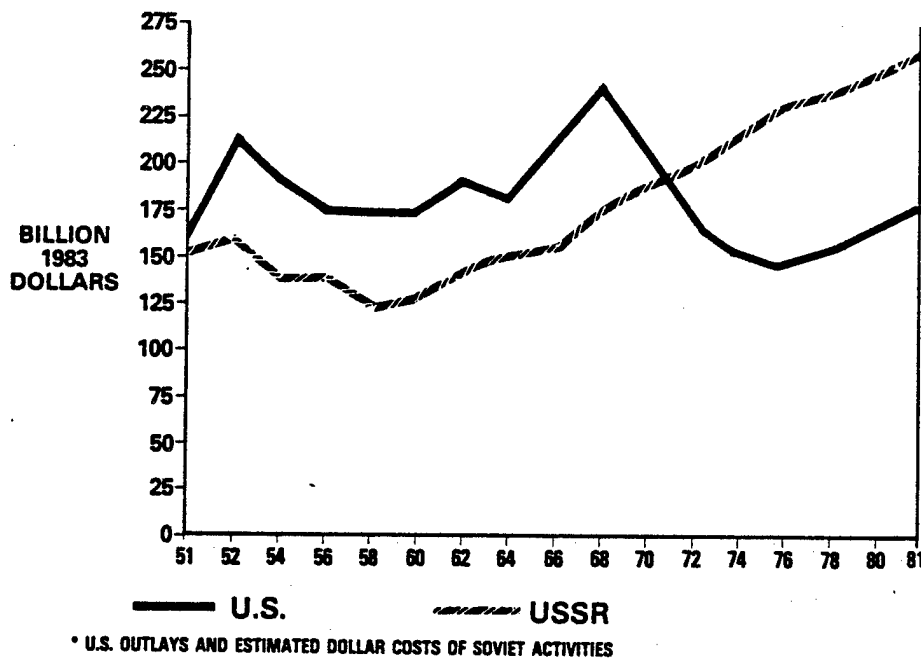


THIS CHART SHOWS U.S. DEFENSE SPENDING OVER THE PAST 30 YEARS--THE SAME COSTS THAT I SHOWED YOU ON A EARLIER CHART COMPARING U.S. AND SOVIET DEFENSE OUTLAYS.

SOME SKEPTICS VIEW THE PATTERN OF U.S. SPENDING IN THE SEVENTIES AS HISTORICAL PROOF THAT WE AS A COUNTRY WON'T SUPPORT SUBSTANTIAL DEFENSE INCREASES, SO WE SHOULD ACQUIESCE TO THE LOW COST APPROACH TO WAR. THEY DON'T SEEM TO RECOGNIZE THAT WE WILL SPEND MORE (AND ALWAYS HAVE) WHEN THE COUNTRY AGREES ON THE NEED, SUCH AS IN WARTIME. NOR DO THEY THINK THAT THE CURRENT UPTURN IN DEFENSE SPENDING IS ANYTHING MORE THAN AN ABERRATION.

IN FACT, MANY OF THE READINESS AND MAINTENANCE PROBLEMS THEY CITE AS PROOF THAT COMPLEX SYSTEMS WON'T WORK STEM FROM MEAGER FUNDING IN THE 1970s. AFTER THE VIETNAM WAR, A CONSCIOUS CHOICE WAS MADE TO FIRST MODERNIZE OUR FIFTIES AND SIXTIES FIGHTERS AND THEN RESTORE READINESS AND SUSTAINABILITY. BUT THEN, OUR READINESS ACCOUNTS WERE HARD HIT BY UNPRECEDENTED AND UNFORESEEN INFLATION, AND WE SUFFERED THE CONSEQUENCES. FORTUNATELY, THE PROBLEM IS RECOGNIZED, AND THE CURRENT LEADERSHIP IS COMMITTED TO RECTIFYING IT.

U.S. AND SOVIET DEFENSE ACTIVITIES*



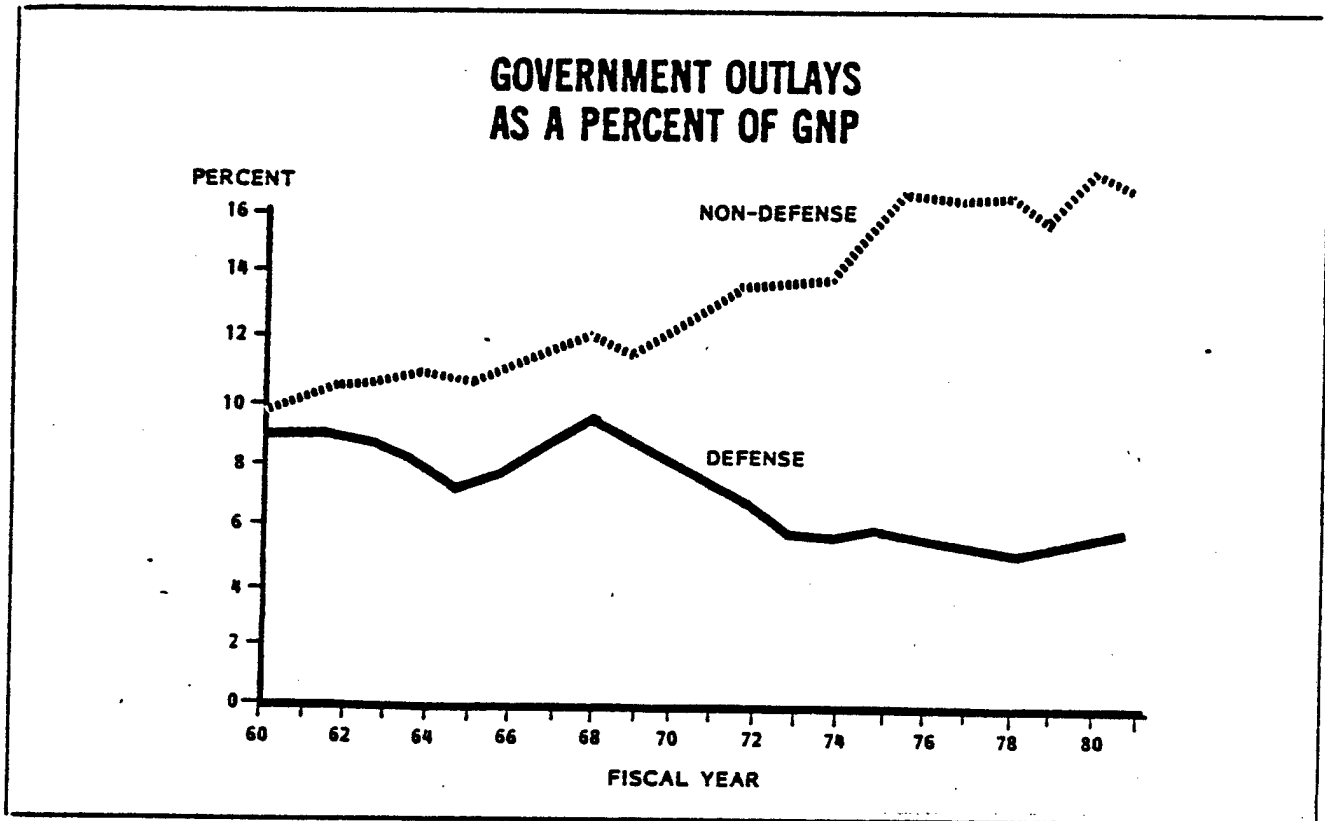
THE PROPER CONTEXT IN WHICH TO VIEW THIS CHART IS WHETHER OR NOT WE ARE INVESTING SUFFICIENTLY TO SATISFY OUR NATIONAL AND MILITARY OBJECTIVES, IN VIEW OF STEADILY INCREASING SOVIET CAPABILITY.

ADDING SOVIET COSTS GIVES US THE SAME COMPARISON AS EARLIER. THE SOVIET LINE REPRESENTS THE THREAT WE FACE, AND WE WON'T BE ABLE TO FACE IT BY SAYING WE WON'T GET THE MONEY WE NEED SO LET'S GIVE UP ON THE VERY TECHNOLOGY THAT HISTORICALLY HAS GIVEN US A COMPETITIVE EDGE AND MINIMIZED OUR CASUALTIES.

WITHOUT A QUALITATIVE EDGE, WE COULD END UP WHERE THE SOVIETS WERE IN THE SIXTIES. WE ARE ALREADY SPENDING LESS THAN THE SOVIETS, AND WE COULD BE PUT IN A POSITION OF BUYING INFERIOR EQUIPMENT ON TOP OF THAT.

Can We Afford Defense Modernization?

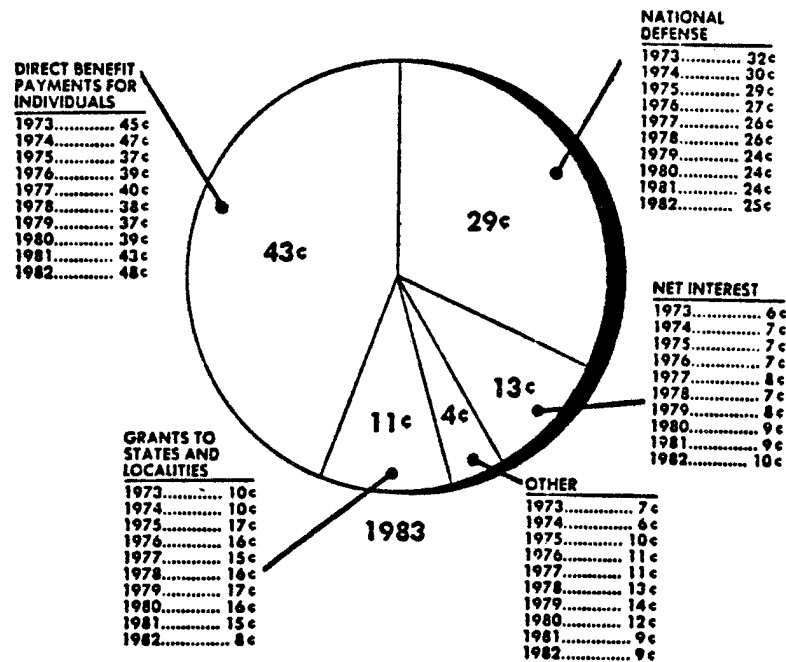
THE REAL QUESTION IS THEN, "CAN WE AS A NATION AFFORD TO RESPOND TO THE SOVIET THREAT?" DEFENSE IS TAKING A LOT OF FLAK RIGHT NOW BECAUSE OF CUTS IN OTHER GOVERNMENT PROGRAMS, WHILE THE DEFENSE BUDGET HAS NOT BEEN CUT BACK PROPORTIONATELY. LET'S LOOK AT SOME FIGURES TO PUT MILITARY EXPENDITURES IN THEIR PROPER PERSPECTIVE.



THIS CHART COMPARES DEFENSE SPENDING TO OTHER FEDERAL EXPENDITURES, IN TERMS OF PERCENT OF THE GROSS NATIONAL PRODUCT (GNP). AS YOU CAN SEE, DEFENSE AND NON-DEFENSE OUTLAYS WERE ABOUT THE SAME IN 1960; BUT NOW, THE PERCENTAGE OF FUNDS GOING TO NON-DEFENSE SPENDING IS ABOUT THREE TIMES GREATER THAN TO DEFENSE.

IN TERMS OF THE PERCENT OF GNP, FUNDS FOR DEFENSE HAVE DECLINED OVER TIME, WHILE THOSE DEVOTED TO NON-DEFENSE HAVE STEADILY INCREASED. DEFENSE HAS BEEN TAKING CUTS FOR OVER TEN YEARS WHILE OTHER GOVERNMENT SPENDING HAS CLIMBED DRAMATICALLY. SO, IT IS HARDLY APPROPRIATE FOR THE MILITARY TO TAKE THE BLAME FOR DEFICIT SPENDING AND ECONOMIC PROBLEMS. NOR IS IT REASONABLE TO EXPECT A STRONG DEFENSE WITHOUT PAYING FOR IT.

WHERE THE FEDERAL DOLLAR GOES



THIS CHART SHOWS THE BREAKOUT OF FEDERAL EXPENDITURES FROM 1973 TO 1983. MANY OF THE COMPLAINTS ABOUT NATIONAL DEFENSE COSTS STEM FROM THE '82 TO '83 RISE OF FOUR CENTS OF EACH FEDERAL DOLLAR--FROM 25 TO 29 CENTS, WHILE PAYMENTS FOR INDIVIDUALS DROPPED FROM 48 TO 43 CENTS.

IF WE LOOK A LITTLE FURTHER BACK IN HISTORY, HOWEVER, WE SEE THAT DEFENSE TOOK A HIGHER PERCENTAGE OF FEDERAL FUNDS IN THE EARLY SEVENTIES, AND THE 43 CENTS FOR INDIVIDUALS MATCHES THE '81 FIGURE--AND IS HIGHER THAN THE 6 YEARS BEFORE THAT. CHANGES IN THE ALLOCATION OF THE FEDERAL DOLLAR DO NOT SEEM SO DRAMATIC IF WE USE A HISTORICAL PERSPECTIVE RATHER THAN CONCENTRATING ON SINGLE YEAR-TO-YEAR CHANGES.

WHERE THE DEFENSE DOLLAR GOES

CONSTRUCTION and OTHER

1973.....	1c
1974.....	3c
1975.....	3c
1976.....	3c
1977.....	3c
1978.....	3c
1979.....	3c
1980.....	2c
1981.....	2c
1982.....	5c

RESEARCH and DEVELOPMENT

1973.....	11c
1974.....	11c
1975.....	11c
1976.....	10c
1977.....	10c
1978.....	10c
1979.....	10c
1980.....	10c
1981.....	10c
1982.....	10c

PROCUREMENT

1973.....	21c
1974.....	20c
1975.....	19c
1976.....	18c
1977.....	19c
1978.....	19c
1979.....	22c
1980.....	22c
1981.....	23c
1982.....	23c

MILITARY PERSONNEL

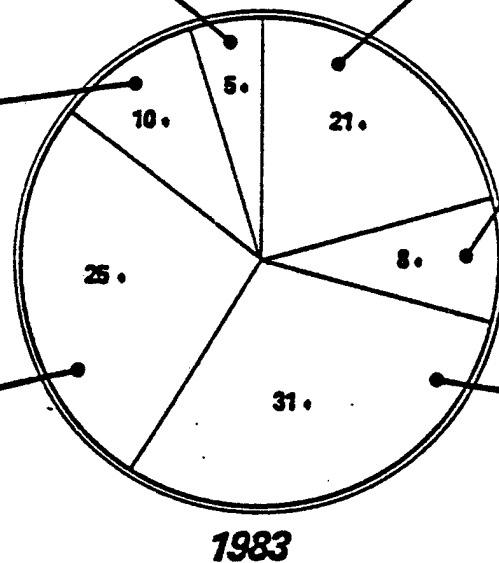
1973.....	32c
1974.....	30c
1975.....	29c
1976.....	29c
1977.....	27c
1978.....	26c
1979.....	25c
1980.....	23c
1981.....	21c
1982.....	21c

RETIRED MILITARY

1973.....	6c
1974.....	7c
1975.....	7c
1976.....	8c
1977.....	9c
1978.....	9c
1979.....	9c
1980.....	9c
1981.....	9c
1982.....	8c

OPERATIONS and MAINTENANCE

1973.....	29c
1974.....	29c
1975.....	31c
1976.....	32c
1977.....	32c
1978.....	33c
1979.....	31c
1980.....	34c
1981.....	33c
1982.....	33c

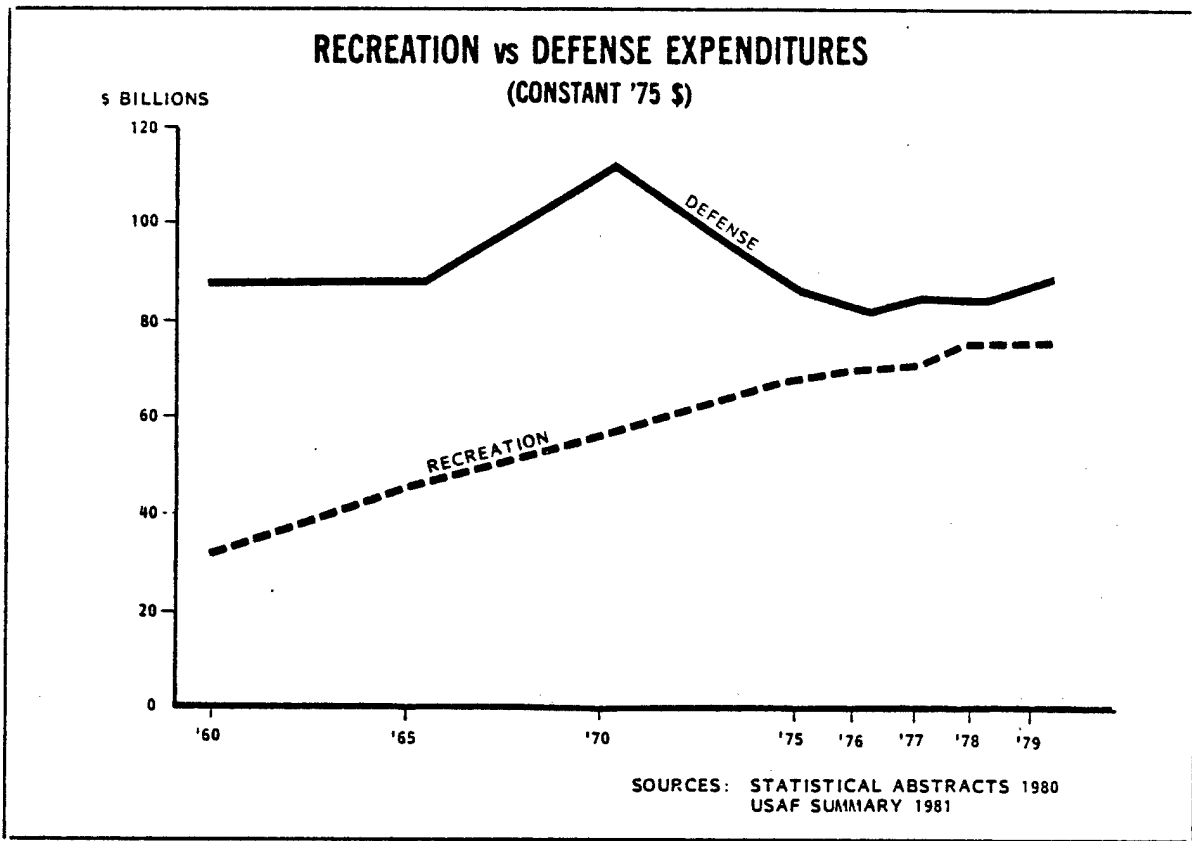


THIS PIE CHART BREAKS OUT DEFENSE OUTLAYS. WHEN WE TALK ABOUT DEFENSE SPENDING, YOU SHOULD REMEMBER THAT ONLY A SMALL PART IS GOING INTO BUYING WEAPONS.

BECAUSE WE HAVE CHOSEN NOT TO HAVE A CONSCRIPT ARMY, BUT A VOLUNTEER FORCE, WE SPEND OVER 20 PERCENT OF EACH DOLLAR ON PAY FOR OUR PEOPLE. IN FACT, WE HAVE BEEN SPENDING OVER 50 PERCENT OF OUR ANNUAL BUDGET ON OPERATIONS, MAINTENANCE, AND ACTIVE DUTY PAY--THAT IS JUST TO OPERATE AND TRAIN OUR CURRENT FORCES TO BE READY.

WE END UP WITH 25 CENTS OF EACH DOLLAR TO BUY THE NEW AND REPLACEMENT WEAPONS AND EQUIPMENT WE NEED TO COUNTER THE GROWING SOVIET THREAT.

FINALLY, WE SPEND 10 PERCENT OF THE DEFENSE BUDGET FOR RESEARCH AND DEVELOPMENT --LESS THAN 3 CENTS OF EACH FEDERAL DOLLAR--TO TRY MAINTAIN OUR TECHNOLOGICAL EDGE OVER THE SOVIETS.



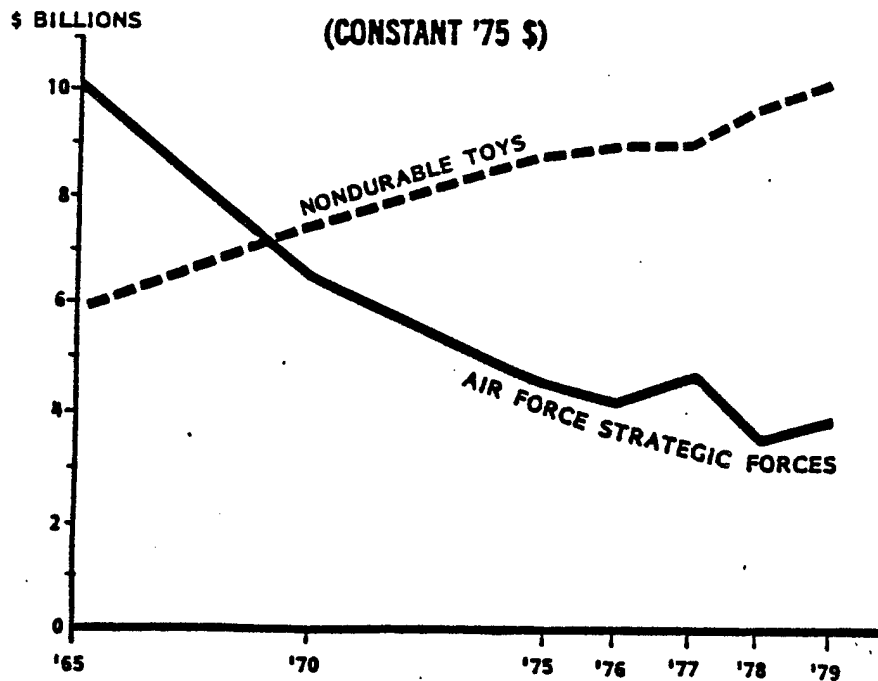
THIS CHART COMPARES TOTAL DEFENSE EXPENDITURES TO WHAT THE U.S. SPENDS ON RECREATION. TWENTY YEARS AGO WE SPENT ALMOST THREE TIMES AS MUCH ON DEFENSE AS ON RECREATION; TODAY, WE SPEND ABOUT THE SAME. BUT, IF THE CURRENT TREND CONTINUES OUR RECREATION EXPENDITURES WILL FAR OUTSTRIP DEFENSE.

WHEN DISCUSSING THE DOD SPACE PROGRAM, THERE IS ANOTHER IMPORTANT PIECE OF INFORMATION TO PUT COSTS INTO PERSPECTIVE. ONE OF THE OUTGROWTHS OF THE DYNAMIC MICROCHIP INDUSTRY IS ELECTRONIC GAMES. LAST YEAR MORE THAN 5 BILLION DOLLARS, THATS TWENTY BILLION QUARTERS, WERE DROPPED INTO COIN OPERATED GAMES. INDUSTRY ESTIMATES PROJECT THIS AMOUNT WILL GROW DRAMATICALLY. SOME ANALYSTS PROJECT THE ELECTRONIC GAME BUSINESS TO EXCEED 10 BILLION DOLLARS A YEAR FOR THE NEXT SEVERAL YEARS. IF THESE FUNDS WERE DIVERTED TO NATIONAL DEFENSE FOR THE NEXT FIVE YEARS THEY WOULD COME CLOSE TO FULLY FINDING BOTH THE B1B AND THE MX MISSILE SYSTEMS. IS IT UNREASONABLE TO ASK THIS COUNTRY TO SPEND AS MUCH ON VITAL STRATEGIC PROGRAMS AS WE ARE SPENDING TO PLAY PACMAN, SPACE INVADERS AND ASTROBLAST?

I AM ALL FOR RECREATION, BUT LET'S NOT FORGET THAT OUR COUNTRY MUST PROTECT IT'S FREEDOM, OR OUR RECREATION WON'T CONTINUE.

IT'S ALSO INTERESTING TO NOTE THAT SINCE 1976, THE AMERICAN PUBLIC HAS SPENT MORE ON ALCOHOL THAN FOR ALL EXPENDITURES FOR THE AIR FORCE. I'M NOT ADVOCATING THAT WE SPEND LESS ON DRINK AND MORE ON THE AIR FORCE, I JUST WANT TO PUT MILITARY SPENDING IN THE PROPER PERSPECTIVE AND TO SHOW THAT WE CAN AFFORD IT.

NONDURABLE TOYS AND SPORTS SUPPLIES vs USAF STRATEGIC FORCES



SOURCES: STATISTICAL ABSTRACTS 1980
USAF SUMMARY 1981

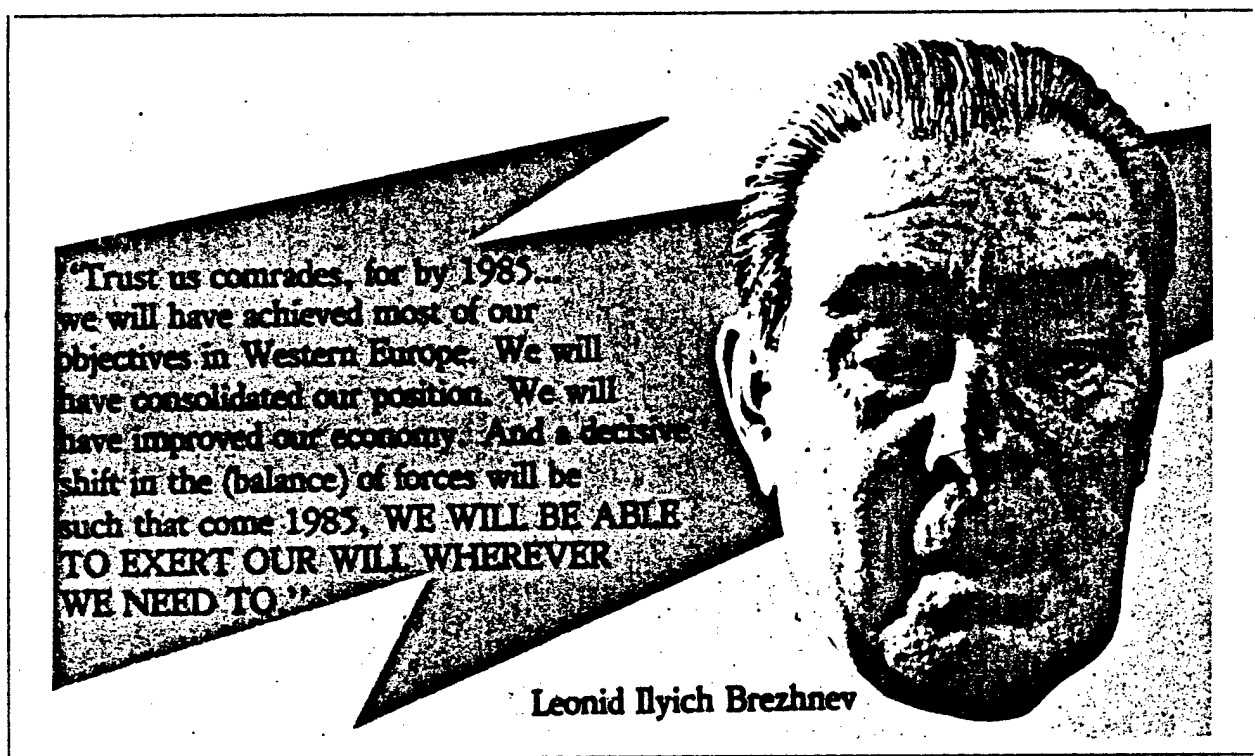
AS A FINAL COMPARISON, HERE IS A CHART WHICH SHOWS HOW MUCH THE AIR FORCE HAS BEEN SPENDING ON STRATEGIC FORCES vs WHAT THE U.S. EXPENDITURES ARE FOR TOYS AND SPORTS SUPPLIES. IF THE TRENDS OF THOSE TWO LINES HAD BEEN REVERSED FOR THE LAST TEN YEARS, WE WOULDN'T BE SO WORRIED TODAY ABOUT THE STRATEGIC POWER OF THE U.S. RELATIVE TO THAT OF THE SOVIETS.

The Soviet's Viewpoint

MY QUESTION WAS, "CAN WE AFFORD TO RESPOND TO THE SOVIET THREAT?"

WELL, I MAY NOT BE CERTAIN OF YOUR ANSWER, BUT I KNOW HOW THE SOVIETS WOULD LIKE YOU TO ANSWER IT.

ABOUT A DECADE AGO, CHAIRMAN LEONID BREZHNEV SAID, "TRUST ME COMRADES, FOR BY 1985... WE WILL HAVE ACHIEVED MOST OF OUR OBJECTIVES IN WESTERN EUROPE. WE WILL HAVE CONSOLIDATED OUR POSITION. WE WILL HAVE IMPROVED OUR ECONOMY. AND A DECISIVE SHIFT IN THE (BALANCE) OF FORCES WILL BE SUCH THAT COME 1985, WE WILL BE ABLE TO EXERT OUR WILL WHEREVER WE NEED TO."



I SURELY WOULDN'T EXPECT ANY UNHAPPINESS IN THE KREMLIN IF WE NOW GRANTED THEM TECHNOLOGICAL AND STRATEGIC SUPERIORITY TO GO WITH THEIR NUMERICAL SUPERIORITY.

PERSONALLY, I BELIEVE THAT, IF YOU OPT FOR THE LOW-COST, SIMPLE APPROACH TO TACTICAL AIRPOWER, YOU WILL GET INEFFECTIVE FORCES AND AN INABILITY TO DO THE JOB. AND, IF WE DON'T PROCEED WITH BOMBER MODERNIZATION WITH ALL DUE SPEED, WE COULD BE GRANTING THE SOVIETS STRATEGIC SUPERIORITY TO COMPLEMENT THEIR MASSIVE CONVENTIONAL FORCES.

UNLESS WE ARE WILLING TO FACE THE CONSEQUENCES AND DANGERS THAT ENTAILS, THE ANSWER TO THE QUESTION, "CAN WE AFFORD TO RESPOND TO THE SOVIET THREAT?" MUST BE YES.

I DON'T BELIEVE WE CAN AFFORD ANY OTHER ANSWER.